



**Musical Timing in the *Adagio* from
Brahms' Violin Concerto, Op. 77: an
Empirical Study of Rubato in Recorded
Performances Dating From 1927 to 1973**

Edward Cross

Submitted in fulfilment of the degree of Doctor of Philosophy

School of Arts and Cultures

March 2014

Abstract

The inter-war period of the twentieth century represents something of a 'golden age' in solo violin playing. In addition to an unprecedented degree of technical prowess, a huge amount of variety existed between different performers, with the majority of well-known artists exhibiting their own unique sound and manner of delivery. One area of expression in which a divergence of approach is most evident is that of musical timing, whereby performers utilise what is generally termed 'rubato' in order to convey either the structure or emotional character of the music. This thesis utilises specialised computational methods of empirical analysis in order to investigate how rubato is used in thirty recordings of the *Adagio* from Brahms' Violin Concerto, Op. 77, made by eminent performers who were active during this period. By comparing these recordings in detail, the principle aim is to ascertain just how much performers differ in their approaches to musical timing and, conversely, where there is some degree of common practice. Literary sources pertaining to rubato from the late-nineteenth and early-twentieth centuries are also scrutinised, in order to determine to what extent these written descriptions of rubato relate to use of the device in real-life performances. Key stylistic traits are identified and categorised, in order to inform performers who are looking to incorporate something of this twentieth-century style of rubato into their own playing.

To date, the vast majority of empirical studies of performance have been conducted in the field of music psychology, with musicological approaches tending to favour close-listening methods in order to identify key stylistic traits. This study has attempted to use both empirical analysis and close-listening in tandem, which allows for the identification of common timing patterns across all thirty recordings, as well as the detailed examination of idiosyncrasies within their respective musical contexts. Sonic Visualiser software has been used to create a number of innovative video examples that incorporate tempo graphs with the original recorded sound, in order to see and hear what is happening in the music simultaneously.

Acknowledgements

I would like to thank my supervisory team at Newcastle University, Bethany Lowe and Kirsten Gibson, for their help and encouragement over the course of this project.

More generally, I am also most grateful for the patience and support offered to me by my family and friends.

Table of Contents

Abstract	i
Acknowledgements	ii
Introduction	1
Chapter 1. Written Evidence of Rubato in the Late-Nineteenth and Early-Twentieth Centuries	33
1.1 Attitudes to Rubato	34
1.2 Types of Rubato	45
1.4 Joseph Joachim	63
1.3 Summary	70
Chapter 2. Working with Recordings	75
2.1 Recordings and Associated Issues	75
2.2 Empirical Performance Data	86
2.3 Problems in Determining Note Onset Times	101
Chapter 3. Comparative study of Rubato in Recorded Performances of Brahms' Violin Concerto in D major, Op. 77, <i>Adagio</i>, Made Between 1927 and 1973	114
3.1 Entire Movement	119
3.2 Bars 32 to 46	130
3.3 Bars 48 to 49	156
3.4 Bars 52 to 54	166
3.5 Bars 56 to 63	171
3.6 Bars 64 to 87	180
3.7 Bars 90 to 102	212
3.8 Coda	226
3.9 Discussion	232
Conclusion	268
Appendix A Facsimile of autograph score	283
Appendix B List of video examples	284
Appendix C Annotated score	287
Bibliography	290
Discography	298

Introduction

All the most important things – the tempo, the total conception and structuring of a work – are almost impossible to pin down. For here we are concerned with something living and flowing that can never be the same even twice in succession. That is why metronome markings are inadequate and almost worthless; for unless the work is vulgarly ground out in barrel-organ style, the tempo will have already changed by the second bar... What matters is that the whole should be alive, and, within the bounds of this freedom, be built up with irrevocable inevitability.¹

The period between the two world wars is often referred to somewhat nostalgically as the ‘golden age of violin playing’, due to the proliferation of talented and distinctive violinists who were either already well-established or in the process of forging their careers at this time.² This thesis examines thirty recordings of the *Adagio* from Brahms’ Violin Concerto, Op. 77 by players who were active during this period, in order to scrutinise the manner in which these performers utilise rubato – one of the key constituents of musical expression – in this kind of late-Romantic repertoire. The thirty recordings that are utilised date from 1927 to 1973; although this time frame extends beyond the inter-war period in question, it allows for the inclusion of performances by key figures such as Nathan Milstein, David Oistrakh, Henryk Szeryng and Isaac Stern who did not record this particular piece until later in their careers. The vast majority of existing literature pertaining to violin playing of the inter-war period is largely biographical, with little emphasis being placed on specifics of performing style.³ This study takes a different approach, utilising innovative empirical methods of computational analysis in order to offer detailed stylistic insight into the way in which

¹ Bauer-Lechner, N. (1923) *Erinnerungen an Gustav Mahler*, p. 46.

² Wen, E. (1992) ‘The twentieth century’, in Stowell, R. (ed.) *The Cambridge companion to the violin*, p. 84.

³ Roth, H. (1997) *Violin virtuosos: from Paganini to the 21st century*. and Schwarz, B. (1983) *Great masters of the violin*. are fairly typical of the existing literature; although they offer a large amount of useful historical and anecdotal information, details concerning the specifics of individual players’ performing style are scarce and tend to be somewhat generalised.

these performers manipulated musical time. Analytical evidence is examined in the light of literary sources pertaining to rubato from the late-nineteenth and early-twentieth centuries, in order to demonstrate how these written descriptions relate to use of the expressive device in performance. Key stylistic traits are identified and subsequently categorised, with a view to ‘informing’ performers who are looking to incorporate something of this style of rubato into their own playing. A number of hypotheses will be tested, including the generally-held view that tempo was treated far more flexibly at the beginning of the twentieth century and gradually became more uniform over time, thus creating a greater degree of similarity between different performers. Issues of structural delineation will also be examined – in particular Neil Todd’s model of ‘phrase final lengthening’ – in the context of Brahms’ *Adagio*, in order to demonstrate how approaches vary throughout the half-century of recorded evidence.⁴

This introductory chapter deals with a number of key areas of interest, beginning with the importance of rubato in the performance of late-Romantic music. Subsequent sections, concerning contemporary approaches to analysis and the study of performance, are intended to place this study into a wider musicological context, as well as giving some background to the methodology that has been chosen for analysing performances.

Rubato in Nineteenth-Century Music.

Dictionary definitions of the term ‘rubato’ that date from the nineteenth- and early-twentieth centuries are far from consistent in their descriptions of the device, as will be examined further in chapter one; it should be noted that in the context of this study the term ‘rubato’ is used in a very general sense to describe flexibility of tempo, both on a small or large scale.

⁴ This model is outlined in Todd, N. (1985) ‘A model of expressive timing in tonal music’, *Music Perception*, 3(1), pp. 33-58.

Of all the elements of musical expression, timing is arguably the most important in that it governs the rate at which musical events occur over time, thus determining the overall pacing of a musical narrative. Bruno Repp describes musical timing patterns as forms of movement: ‘they govern the variable rate at which the musical sound structure unfolds. Dynamic patterns are part of the sound structure itself. They are part of what is unfolding, whereas timing governs *how* this unfolding is taking place.’⁵ Gustav Mahler’s opening description of musical timing as being something that is ‘living and flowing’ rather than a metronomically-rigid template for performance is a sentiment that strikes a particular resonance with nineteenth- and early twentieth-century musical writings. Franz Liszt, for instance, urges that ‘one must not stamp music with a uniform balance, but speed it up or slow it down with spirit and according to the meaning that it possesses.’⁶ Rubato is arguably the most crucial ingredient – the “*sine qua non*” – in the interpretation of nineteenth-century music, which presents the performer with numerous structural issues, such as how to relate sections or shape individual phrases.⁷ John Rink discusses the ‘particular temporal problems’ involved in creating a necessary sense of cohesion, both within and between different levels in the music’s structural hierarchy:

Vital for intelligible, effective performance, it means giving the music a sense of shape in time by devising a hierarchy of temporally defined musical gestures from the small to the large scale. While playing, the performer engages in a continual dialogue between the comprehensive architecture and the “here-and-now”, between some sort of goal-directed impulse at the uppermost hierarchical level (the piece “in a nutshell”) and subsidiary motions extending down to the beat or sub-beat level, with different parts of the hierarchy activated at different points within the performance.⁸

⁵ Repp, B. (1999) ‘A microcosm of musical expression. II. Quantitative analysis of pianists’ dynamics in the initial measures of Chopin’s Etude in E major’, p. 1982.

⁶ Description of a lesson given by Liszt to Valérie Bossier (1832). Cited in Rink, J. (1999) ‘Translating musical meaning: the nineteenth-century performer as narrator’, in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 220.

⁷ Wagner, R. (1887) *Über das Dirigieren*, p. 320.

⁸ Rink, J. (1999) ‘Translating musical meaning: the nineteenth-century performer as narrator’, in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 218.

Performers engaging with Romantic repertoire will inevitably be concerned with the concept of rubato; as Sarah Martin explains, without the modulation of musical time at different structural levels, such music would be almost ‘unrecognisable’.⁹ One of the central aims of this study is to investigate the vital role rubato plays in communicating the complex melodic and harmonic formal structures inherent in much late-nineteenth and early-twentieth century music.

In addition to such formal imperatives, Romantic music presents the performer with an unprecedented number of expressive requirements. Nineteenth-century scores contain much more performing information pertaining to tempo, dynamics and articulation than those of earlier periods, along with myriad expressive instructions, such as *dolce* and *espressivo*, that refer not to specific expressive categories such as dynamics or articulation, but instead to more-abstract ‘overall’ musical effects that are achieved only through a number of these categories working in combination. All of this additional score-based information necessitates intelligent interpretation by performers, in order to satisfy the increasingly-specific demands made of them by composers.

Musicology and the Importance of the Score

According to Eric Clarke, musicology – in particular musical analysis – has traditionally focused almost all of its attention on the score and resulting structural abstractions when studying musical works.¹⁰ José Bowen cites the aforementioned increase in notational detail from composers as a key reason for this emphasis being placed on the written text:

For the last three hundred years, composers have increasingly tried to exercise more control over the variability of performances by being more specific in everything from pitch content and instrumentation to dynamics and even the

⁹ Martin, S. (2002) ‘The case of compensating rubato’, p. 95.

¹⁰ Clarke, E. (1995) ‘A semiotic perspective on expression and meaning in performance’, p. 88.

physical experience of playing. With this growing emphasis on the immutable notated text it was only natural that musicologists study scores and not performances.¹¹

Aside from certain writings by composers pertaining to their own works, the musical score traditionally represents the 'composer's voice' in its purest form, undiluted by the individuality of a particular performer's interpretation, which explains to a large degree why it has received so much attention. Indeed, the score plays a particularly vital role in Western classical music, as without it the performance of a work could not take place.¹² Furthermore, for the musicologist, the score is not simply a crude musical reduction; as Nicholas Cook states, 'it's also a fundamental aspect of the culture that gave rise to it'.¹³ However, notated music is exactly that, a visual representation of an audible phenomenon, which therefore offers a somewhat incomplete perspective of a musical work. Bowen sees musical works more as 'social constructions which change through the mechanism of performance'¹⁴ and Lawrence Rosenwald similarly states that a piece exists 'in the relation between its notation and the field of its performances'.¹⁵ Performance arguably represents an essential part of a work's overall identity, therefore using scores as the sole basis for analytical study is intrinsically limited, as it ignores the role of both the performer and the listener. As Cook explains, 'it is a simple statistical fact that for most people around the world, music means performance, whether live or recorded, and not scores.'¹⁶ It is therefore somewhat surprising that, prior to the 1980s, the role of the performer was largely considered irrelevant to analysis. According to Joel Lester, 'analyses are assertions about a piece, not a particular rendition. Performers and performances are largely irrelevant to both the analytical process and the analysis itself.'¹⁷

¹¹ Bowen, J. (1993) 'The history of remembered innovation: tradition and its role in the relationship between musical works and their performances', p. 140.

¹² Although the score is not always utilised in public performances, it plays a vital role in the process of practising and memorising a piece.

¹³ Cook, N. (2005) 'Towards the complete musicologist', p. 4.

¹⁴ Bowen, J. (1993) *Op. cit.*, p. 142.

¹⁵ Rosenwald, L. (1993) 'Theory, text-setting and performance', p. 62.

¹⁶ Cook, N. (2009) 'Changing the musical object', in Blazekovic, Z. (ed.) *Music's intellectual history*, p. 775.

¹⁷ Lester, J. (1995) 'Performance and analysis: interaction and interpretation', in Rink, J. (ed.) *The practice of performance*, p. 198.

Score-based studies can also lead to an imbalance in perception, in that they tend to focus on a limited number of parameters – particularly pitch – at the expense of considering the overall effect of a piece. Roy Howat argues that, ‘like performance, analysis only follows music’s footprints, and its focus on a particular set of features at a time – usually pitch relationships (or more rarely rhythmic ones), mostly to the exclusion of nuance and indications of feeling – can distract from one’s perception of the whole.’¹⁸ Of course, the same criticism could be levelled at studies like this, that focus on a specific expressive parameter such as timing at the expense of other elements such as dynamics and *vibrato*; however, in order to be useful it is nonetheless important for this kind of study to be limited in scope. Repp asserts that ‘an objective characterization of performance similarities and differences can be attempted only if the investigation is severely restricted in terms of the length of the music and of the expressive parameters considered.’¹⁹ In spite of this study’s specific focus on musical timing, the ability afforded by computer software to re-integrate analytical abstractions of the music with their original sound-source means that the analyst is never too-far removed from these other parameters and, therefore, the performance ‘as a whole’.²⁰

There is much that is variable within any given score, no matter how precise or detailed the notational methods, as Bowen explains:

Even in the most note-specific music, however, dynamics, tempo, phrasing, rhythmic placement, accent, rubato, timbre, use of *vibrato* and *portamento* and all of the other factors that a performer adds to the pitch content are highly variable. (As Mahler said, “what is best in music is not to be found in the notes.”)²¹

Colin Lawson and Robin Stowell refer to the score as ‘an imprecise mechanism, which by its very nature offers even the most dutiful performer a rich variety of

¹⁸ Howatt, R. (1995) ‘What do we perform?’, in Rink, J. (ed.) *The practice of performance*, p. 4.

¹⁹ Repp, B. (1998) ‘A microcosm of musical expression. I. Quantitative analysis of pianists’ timing in the initial measures of Chopin’s Etude in E major’, p. 1085.

²⁰ Chapter 3 utilises a number of innovative video examples, which will be discussed in more detail in chapter 2.

²¹ Bowen, J. (1993) *Op. cit.*, p. 149.

possibilities’.²² These possibilities require decisions to be made by the performer, in order to translate ambiguity within the score into a convincing audible performance; without this essential act of interpretation, the realisation of any musical work would be impossible. Of particular relevance to this study, the crucial element of musical timing is largely absent from the score, and so tends to escape analysis, as explained by Jonathan Dunsby:

What analysis seems so little able to capture is that secret of the performer – timing – which subsumes so many factors such as rubato, structural articulation and expressive emphasis, and which is such a powerful element in the presentation of almost any composition.²³

Whilst nineteenth-century scores contain a large amount of information relating to tempo, such as notated *accelerandi* and *ritardandi*, the vast majority of decision-making with regards to timing, especially in terms of phrasing at lower structural levels, is down to the performer; therefore, the only means of pinning down this elusive element of expression is by examining the work as manifested in performance.

Musicological Study of Performance

There are a number of fundamental differences between performance analysis and traditional score-based analysis, one being that performances are paradoxically both richer and more limited than scores. According to Lester:

Performances are one sort of realisation of a piece (in most cases the sort intended by the composer), and are at once richer and more limited than scores. They are richer in that performances add features never fully notated in any score – myriad nuances of articulation, timbre, dynamics, *vibrato*, pitch, duration and so forth. Yet each nuance limits the piece by excluding other options for that element. In this sense, a performance is necessarily only a

²² Lawson C. and Stowell, R. (1999) *The historical performance of music: an introduction*, p. 2.

²³ Dunsby, J. (1989) ‘Performance and analysis of music’, p. 14.

single option for that piece, delineating some aspects while excluding others – just like a single analysis.²⁴

For this reason, if one is interested in examining a work ‘as a whole’, as opposed to just a single rendition of that particular work, it is immediately necessary to examine more than one performance. Peter Johnson explains that ‘multiple recordings allow us to explore the work as a multi-faceted object, or even as something not materially determined until it is read or performed.’²⁵ Although analysis of a single performance has the potential to offer useful insight into that particular interpretation, a large sample size of performances is vital if any conclusions drawn from them are to be sufficiently archetypal of the work or period in question. According to Repp, ‘such analyses are really informative only when the sample of performances analysed is as large as possible, so that many different artists and almost all reasonable ways of playing a musical passage are represented.’²⁶ Cook evokes the idea of performance ‘dimensions’, stating that ‘the “vertical” dimension which relates score to performance is, in this way, complemented by a “horizontal” dimension that relates each performance to others, and this second dimension can only be incorporated into the analysis if we analyse recordings comparatively, and use large enough data sets to be able to extrapolate trends from them.’²⁷

Only the most narrow-minded of performers would lay claim to a particular rendition being the ‘correct’ one; however, this sort of assertion is far more common in the field of music analysis, which offers a further reason why analysis has been relatively slow to relinquish the relatively-unambiguous security of the written score, as Lester explains:

Making choices among various possibilities is an important part of any sort of interpretation, both in analysis and in performance. But in contrast to the way in which analytical decisions are often regarded, performance decisions suggest

²⁴ Lester, J. (1995) *Op. cit.*, p. 199.

²⁵ Johnson, P. (2002) ‘The legacy of recordings’, in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 209.

²⁶ Repp, B. (1999) *Op. cit.*, p. 1086.

²⁷ Cook, N. (2009) *Op. cit.*, p. 781.

that many (though certainly not all) possible choices are not so much “right” or “wrong” as simply different, leading to varying perspectives.²⁸

Although this element of choice provided by the act of interpretation can provide a daunting prospect for analysis, which has traditionally dealt with fixed variables within the score, Lester argues that expanding the field of analysis to include multiple performances of musical works also opens up a great deal of possibilities:

Acknowledging that performances are relevant to analysis will also dramatically broaden the repertoire that theorists call upon when making analytical assertions. There are a great many more recorded performances of most pieces than there are published analyses... In addition, performance decisions, because they arise from so many different perspectives, likely reflect a much wider range of structural options than analyses, many of which tend to address a fairly limited agenda.²⁹

Before discussing specific methodologies for the analysis of performance it is necessary to consider the act of interpretation in greater detail, in order to understand more fully Bowen’s concept of the musical work as a ‘social construction’.

What Constitutes an Interpretation?

At a fundamental level, the signs and shapes that constitute the language of Western musical notation require a basic process of ‘decoding’ in order to understand the pitches, rhythms and other notational instructions offered by the composer; however, the majority of these basic processes of score-reading are more a matter of translation than individual interpretation, as they relate to ‘fixed’ variables such as pitch and metre that cannot, generally, be altered in performance. Interpretation is concerned with the manner in which these fixed variables are executed, which is not simply a matter of personal choice based on rough expressive indications within the score, but also involves the influence of pre-existing stylistic traditions and aesthetics relating to

²⁸ Lester, J. (1995) *Op. cit.*, p. 211.

²⁹ Lester, J. (1995) *Op. cit.*, pp. 213-214.

the work or period in general. Bowen takes a subtractive approach to pin down exactly what individual interpretation involves, dividing performance traits into three categories – styles, traditions, and innovation and individual choice – and eventually arriving at a definition of individual interpretation by a process of deduction:

(1) Styles

Any number of important aspects of the performance may be caused by a variety of separate styles (all of which work together to create the general style of performance). Some styles may be characteristic of a particular period, geography, repertoire or genre. Further, some institutions or instruments might have styles[...] Artists themselves can also have unique styles which apply to all of their performances.

(2) Traditions

The style aspects are those elements of the music which are always the same across the given dimension (period, institution or artist), but often exceptional features occur through the history of a specific work. In the first movement of the Brahms First Symphony, for example, every conductor slows down a little for the second theme; this is a common feature of twentieth-century performance styles for many repertoires... Such traditions of performance are specifically tied to individual works.

(3) Innovation and Individual Choice

After subtracting all of that, we finally get to what most critics think they are talking about: the individual interpretation... Again there is a distinction here between the general choices that artists regularly make and which constitute a consistent style (the Heifetz sound), and the individual choices that they make in specific pieces (the uses to which Heifetz might put that sound in a specific measure). While there are stylistic innovations (like Heifetz's violin sound) the

innovations of interpretation refer exclusively to specific devices and places in specific compositions.³⁰

Crucially, however, Bowen goes on to concede that 'it is difficult to identify the unique aspects of a performance and sometimes it is impossible to separate out the three categories.'³¹ This process of deduction, although comprehensive and seemingly logical, is somewhat stacked against the role of the performer in that it suggests that their personal input equates to what is left after the elements of style and tradition are stripped away. It does not consider how much of a given style or tradition a particular player consciously chooses to incorporate into their own playing, which could arguably be seen as a kind of interpretation in its own right. Repp instead regards the score, along with style and tradition, more as restrictive influences rather than a point of departure: 'actual performances thus are only a small subset of the gamut of possible performances. Their variety is hemmed in both by notated instructions (in the Western standard repertoire) and by tacit rules and conventions that define what expressive actions are acceptable, appropriate, and aesthetically pleasing within a given musical structure.'³² This idea can be seen as contrary to Bowen's, in that Repp begins with an individual's interpretation and then subtracts elements that are not deemed appropriate, either due to notated instructions or wider notions of aesthetic and stylistic taste. It is arguably more useful to consider interpretation as a synthesis of these three different factors: styles, traditions and individual choice, as the manifold relationships between the three are far too complex to offer a simple subtractive model such as that of Bowen or Repp.

These complex relationships frequently involve dichotomies, such as that between serving the composer's intentions and projecting one's own musical personality, which Bowen explains in the context of jazz music: 'Every utterance of a musical work is a compromise between communication and individual expression, just as a jazz performance is a compromise between the identity of the musical work and trying to

³⁰ Bowen, J. (1996) 'Performance practice versus performance analysis: why should performers study performance?', pp. 21-22.

³¹ *Ibid.*, p. 22.

³² Repp, B. (1998) *Op. cit.*, p. 1085.

“make the tune one’s own”.³³ The performer is commonly portrayed as a kind of intermediary, who ‘must mediate between the identity of the work as conveyed by the force of tradition and the individual’s desire to explore new territory.’³⁴ With this idea of ‘mediation’ comes one of balance, in weighing-up the intentions of the composer and established performing traditions against the individuality of the performer; this notion of balance is one that appears time and time again in writings pertaining to performance from musicologists, as well as performers and critics. Dunsby tells us that ‘the performer needs some mediation between the spiritual and the actual, without undermining either. This can begin to be achieved by making a rather simple distinction, one which is often overlooked, between interpretation and performance.’³⁵ Cook presents a slightly different dichotomy between ‘playing’ and ‘writing’: ‘musical performance involves negotiating between the demands of physical gesture and sound (we can classify these under the heading of “playing”) and those of notation and its associated verbal traditions (“writing”).’³⁶ John Sloboda highlights a comparable relationship between the physical act of music making and communication of its content: ‘Expert musical performance is not just a matter of technical motor skill, it also requires the ability to generate expressively different performances of the same piece of music according to the nature of intended structural and emotional communication.’³⁷ It is left to the performer’s temperament to balance all of these complex and often-conflicting factors when formulating their own interpretation.

Unsurprisingly, there is much evidence that a greater degree of variety is displayed between performances by the most eminent performers, suggesting that the element of individual interpretation plays a more prominent role in their renditions than less experienced performers. Sloboda, referring to performance analysis in general, explains that ‘in many cases it is the most eminent performers whose performances are most exaggeratedly different, both from each other and the statistical mean.’³⁸ He

³³ Bowen, J. (1993) *Op. cit.*, p. 164.

³⁴ *Ibid.*, p. 168.

³⁵ Dunsby, J. (1989) *Op. cit.*, p. 7.

³⁶ Cook, N. (1999) ‘Analysing performance and performing analysis’, in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 251.

³⁷ Sloboda, J. (2000) *Op. cit.*, p. 397.

³⁸ *Ibid.*, p. 400.

also discusses the ‘widely varying aesthetic and emotional impact that can be created in listeners by different performers, even when they are playing the same piece of music with the same level of overall technical and artistic competence.’³⁹ Again, this highlights the fact that there is rarely a ‘correct answer’ when it comes to performance, although players are always constrained to some degree by notation, tradition, style and the wider issue of taste, which will be discussed in more detail later.

Having gone some way in establishing a theoretical model for musical interpretation, attention can now be turned to the way in which it functions in practice. Musical interpretation essentially serves two fundamental purposes: the delineation of structure and the communication of character and emotions, as Sloboda explains:

Two lines of explanation have yielded the most fruit. One of these considers expressive variation as a means of signalling or emphasizing structural features of the music. The second considers expressive variation as a means of signalling information about the “character” of the music, in particular its emotional significance. These explanations actually overlap, in that some forms of structural communication turn out, in and of themselves, to have emotional impact.⁴⁰

Both of these interpretational imperatives are manifested in music at different levels; this is most obvious in terms of structure, which, as per Schenker, consists of different hierarchical levels ranging from the movement as a whole down to individual phrases or bars. However, this idea of hierarchy can also be applied to the expression of character; a piece or single movement may have a prevailing character or mood, in addition to numerous smaller-scale changes of expression and feeling from phrase-to-phrase or even note-to-note. The violinist and pedagogue Leopold Auer explains this ‘latitude in expression’ in the section of *Violin Playing as I Teach It* entitled ‘Nuance’:

And in practically all modern works the composers have fully indicated the tempi, the dynamic stresses and effects, the character of the movements, and

³⁹ *Ibid.*, p. 398.

⁴⁰ Sloboda, J. (2000) *Op. cit.*, p. 400.

the inflexions of tone to be observed. Yet with all these guideposts to point out the road to perfect interpretation, there still remains the widest room for individual latitude in expression, in colour, in emotional fervour, in dramatic intensity. I have already said that temperament is not a substitute for nuance – no violinist can interpret a composition in all its varied beauty by temperament alone – yet temperament, which is the special mental quality that lends individuality to performance, is always a valuable factor.⁴¹

Whereas the expression of character offers a near-infinite amount of possibility with regards to interpretation, Repp asserts that structural delineation is more limited in the choices made available to performers: ‘while structural interpretation draws on a limited set of categorically distinct possibilities, expressive shaping draws on a circumscribed but continuous and therefore expressively unlimited range of possibilities.’⁴² This argument makes a lot of sense, in that there may be one or two ways in which a particular passage can be subdivided into shorter phrases, whereas within those phrases there is far more scope for individuality in interpretative approach.

The Performer as Analyst

Structural interpretation inevitably involves the undertaking of some kind of musical analysis. The performer either undertakes this task themselves or occasionally has the option of familiarising themselves with a pre-existing analysis, as did William Furtwängler with Schenker’s analyses of Beethoven symphonies.⁴³ But to what extent do performers actually engage with analysis and, importantly, are they even aware that they are doing it? The vast majority of performers receive their formative education at conservatoires rather than universities; although conservatoire students increasingly receive some degree of academic grounding in music history and analysis,

⁴¹ Auer, L. (1921) *Violin playing as I teach it*, pp. 67-68.

⁴² Repp, B. (1999) *Op. cit.*, p. 1982.

⁴³ An in-depth discussion of the relationship between Furtwängler’s performances of Beethoven’s ninth symphony in relation to Schenker’s analysis is undertaken in Cook, N. (1995) ‘The conductor and the theorist: Furtwängler, Schenker and the first movement of Beethoven’s Ninth Symphony’.

the emphasis is naturally centred on practical vocal or instrumental training. Rink asserts that formal analysis of a piece of music is essential in order to produce a meaningful performance, stating that ‘to construct a musical narrative initially requires close study of the score – “structural analysis” – in order to reveal its particular message or meaning, as a preliminary to translating it into sound.’⁴⁴ Edward T. Cone takes a similarly strong viewpoint when speaking of the relationships between events in a composition: ‘the job of analysis is to uncover them explicitly, but they are implicitly revealed in every good performance.’⁴⁵ The implication from these statements is clear – analytical awareness is essential in order to produce what Cook refers to as a ‘structurally-informed performance’.⁴⁶ This kind of thinking is commonplace in twentieth-century writings, in particular those by analysts as one might expect. Schenker is well known for considering the analysis of work of paramount importance to performers: ‘Performance must come from within the work; the work must breathe from its own lungs – from the linear progressions, neighbouring tones, chromatic tones, modulations... About these, naturally, there cannot exist different interpretations.’⁴⁷ He also advocates awareness of different structural levels within the music, as Dunsby explains:

“Beyond all these shadings, still further, more delicate nuances come into consideration... But they must all be integrated into the primary dynamic scheme and the inner shadings of a higher structural order.” He is also careful to remind us elsewhere, however, that a “higher structural order” is not an excuse for the performer to neglect the tiniest details of a score, any more than “the trail-map spares the climber the necessity of negotiating each path, stone and morass.” The detail, he says, “must mean the same thing to the performer as to the composer”.⁴⁸

⁴⁴ Rink, J. (1999) *Op. cit.*, p. 223.

⁴⁵ Cone, E. T. (1962) ‘Analysis today’, in Lang, P. H. (ed.) *Problems of modern music*, p. 36. Cited in Cook, N. (1987) ‘Structure and performance timing in Bach’s C major Prelude (WTC1): an empirical study’, p. 257.

⁴⁶ Cook, N. (1999) *Op. cit.*, p. 249.

⁴⁷ Rothstein, W (1984) ‘Heinrich Schenker as an interpreter of Beethoven’s Piano Sonatas’, *19th-Century Music*, 8, p. 10. Cited in Cook, N. (1999) *Op. cit.*, pp. 246-247.

⁴⁸ Dunsby, J. (2002) ‘Performers on performance’, in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 233.

Dunsby goes on to argue that Schenker and Schoenberg are jointly responsible for the development of this thinking in the twentieth century:

Many will assume that the greatest music-theoretical and music-analytical impact on present-day performance practices has emanated from the Schenkerian school... Yet it can be argued that at least as much has been inherited from those whose musical education stemmed directly or indirectly from Arnold Schoenberg; for it is a Schoenbergian assumption that a thorough conceptual understanding of the musical score is the prerequisite of adequate performance.⁴⁹

It is hardly surprising that composers and analysts would advocate an in-depth understanding of their respective crafts, although there still remains the question as to how much of this rather tall order performers actually take on board. Richard Taruskin, using rather softer language, states that performers like to be 'informed':

Really talented performers are always curious, and curious performers will always find what they need in the sources and theorists – what they need being ways of enriching and enlivening what they do.⁵⁰

Whilst 'always' may be an overstatement, analysis can certainly be seen as a useful problem-solving tool for performers, empowering them when making decisions regarding their own interpretations. Rink states that 'to understand more fully the ways in which music might be organised, can prove liberating to musicians striving for more informed intuition, more profound conscious thought and greater powers of verbal articulation'.⁵¹

Conversely, performers do not always appreciate being lectured as to the 'correct' way to approach a piece, particularly as to them the notion of a correct interpretation would be seen as something of an oxymoron that 'threatens their musical freedom.'⁵²

⁴⁹ Dunsby, J. (1989) *Op. cit.*, p. 6.

⁵⁰ Taruskin, R. (1995) *Text and act: essays on music and performance*, p. 148.

⁵¹ Rink, J. (2002) 'Analysis and (or?) performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 41.

⁵² *Ibid.*, p. 41.

Janet Ritterman cautions that 'young performers need to be helped to acquire this knowledge gradually and to wear it lightly; it cannot be a substitute for musical instinct, or become so weighty that it silences the personal voice.'⁵³ Indeed, a number of musicologists, including Janet Schmalfeldt, take the more extreme view that performers are unconcerned with analysis entirely:

Most performers describe their effort toward that goal as a primarily intuitive process, a matter of becoming intimate with the work through physical as well as mental activity. To the performer, then, the analyst's concern about the craft of composition, his interest in relationships between events widely separated in musical time, his need to develop a terminology for comparing compositional techniques, these can seem foreign if not irrelevant.⁵⁴

Dunsby's views are slightly more moderate, suggesting that analysis is not high on a performer's agenda: 'a theory of which the central aim is to demonstrate tonal coherence may be of great importance to the performer, but the performer is concerned with much else besides.'⁵⁵ Carolyn Abbate takes a more practical standpoint, arguing that it is impossible to be conscious of analytical issues when involved in the act of music-making:

While musicology's business involves reflecting upon musical works, describing their configurations either in technical terms or as signs, this is, I decided, almost impossible and generally uninteresting as long as real music is present – while one is caught up in its temporal wake and its physical demands or effects.⁵⁶

However, the question remains as to whether or not structural awareness really needs to be consciously manifested during performance. When players are preparing music through practice they are generally concerned with different issues than in the actual performance; for example, for string players, a particularly technically difficult passage may require slow, concentrated work on intonation, bow control or shifting, whereas

⁵³ Ritterman, J. (2002) 'On teaching performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 84.

⁵⁴ Schmalfeldt, J. (1985) 'On the relation of analysis to performance: Beethoven's Bagatelles Op. 126, Nos. 2 and 5', p. 1.

⁵⁵ Dunsby, J. (1989) *Op. cit.*, p. 14.

⁵⁶ Abbate, C. (2004) 'Music: drastic or gnostic?', p. 511.

in the performance the performer will far more likely be concerned with wider concerns such as ensemble or phrasing. Practising – in particular scales and other technical exercises or studies – can be seen as an act of ‘pre-programming’, so that the performer does not have to be consciously concerned with how to negotiate successfully from one note to the next during the performance, in the same way that an actor commits their lines to memory so that they can concentrate on the act of dramatic communication when on stage. The same could conceivably be true of an analytical understanding of a piece which, once assimilated, will influence a performer’s interpretation on a sub-conscious level, without necessarily being in the forefront of their mind during a public performance or recording. Lester argues that players act on instinct, rather than consciously engaging with analysis:

Their goal is not necessarily to analyse the piece. It may well be, for instance, that when Horowitz played a half cadence in bar 40 of Mozart’s Minuet from K. 331 he was not consciously aware of anything other than creating an ‘effective’ performance, however he defined that concept. Indeed many performers may be concerned with little more than achieving an “effective” performance – one which pleases their sense of fancy and propriety (stylistic and aesthetic propriety as well as matters of stage decorum) and which is received by their audiences with approval.⁵⁷

However, that is not to say that when performers create what they deem to be an ‘effective’ performance, analysis does not take place at least to some degree, even on an unconscious level, whilst a performer is familiarising themselves with a new piece through practice.

Performers aside, this issue of structural awareness also extends to the listener; do listeners really appreciate structural delineation as much as theorists and analysts? Repp writes that ‘there is probably only a small number of music lovers who listen to music in order to be informed about its structure. Although it is always possible to view expression as being *about* the musical structure, this approach misses the essence of musical communication, which is to move listeners and to stimulate their

⁵⁷ Lester, J. (1995) *Op. cit.*, pp. 207-208.

imagination.⁵⁸ Elsewhere he differentiates between the way in which analysts and 'ordinary' listeners appreciate music: 'music theorists and analysts may find intellectual pleasure in being able to hear structural detail or resolved ambiguities, but this is very different from the intuitive, almost visceral response of the ordinary music lover to musical expression.'⁵⁹ In the same way that performers are able to unconsciously delineate structural features during performance, it is also plausible that listeners appreciate this delineation in performances without actually being aware of it taking place. In the case of intonation, there is a tendency to only be aware of it when a note is played out of tune, whereby the listener's attention is immediately drawn to the error; similarly, listeners may be so accustomed to performers' shaping of musical time to communicate structure that they are unaware of it taking place at all.⁶⁰

Rather than structure *per se*, Rink argues that performers tend to be more concerned with the general 'shape' of music; in relation to a 'performer's analysis', he tells us that 'its primary goal is to discover the music's "shape", as opposed to structure, as well as the means of projecting it.'⁶¹ This is perhaps more likely to be the case with performers who do not always feel it necessary to familiarise themselves with the complete musical score; aside from pianists and in the case of unaccompanied solo music, performers naturally tend to concentrate their efforts on their own part, which represents only a fragment of the complete score and, as a result, does not necessarily contain all of the information required for a thorough harmonic and structural understanding of a piece. Auer stresses the importance of analysing a piece's melodic content:

The violinist must always remember, however, that the individual musical phrase or sentence – just like a sentence in a book – is but a single unit of the entire melody-line. .. When studying a composition for the first time, it is essential that the student try to grasp the idea as a whole, that he get a clear

⁵⁸ Repp, B. (1998) *Op. cit.*, p. 1096.

⁵⁹ Repp, B. (1999) 'A microcosm of musical expression. III. Contributions of timing and dynamics to the aesthetic impression of pianists' performances of the initial measures of Chopin's Etude in E major', p. 470.

⁶⁰ What is perceived as 'correct' tuning is, of course, something of a subjective area, which can be affected by particular tuning systems, as well as by the listener's own sensibilities.

⁶¹ Rink, J. (2002) *Op. cit.*, p. 39.

mental conception of its general structure before attempting to give a final interpretation of the character of the work.⁶²

As a violinist, one would perhaps be expected to approach the act of interpretation from a melodic point of view; when beginning work on a new piece one's first instinct is most probably to play it, rather than sitting down with the score to undertake a Schenkerian analysis. From a pianistic standpoint, an understanding of underlying harmonic structure is arguably more useful as the performance of piano music almost inevitably involves immediate engagement with music from a harmonic perspective; however, ideas pertaining to melodic shape consistently play a more important role in most performers' discourse. Given that specialised analytical terms such as 'linear progressions' or 'segmentation' rarely crop up during a rehearsal, this language might be considered somewhat inappropriate in discussing performance. In order to study performers 'on their own terms', Martin considers it necessary to incorporate their own style of language, rather than traditional analytical terminology, in order to better-understand the manner in which they approach music-making.

Whilst it is clear that some level of structural understanding is beneficial to performers in order to produce a convincing rendition of a piece of music, this level of understanding can vary from individual to individual, ranging from a basic appreciation of musical shape right through to an in-depth structural understanding of the work as a whole. Dunsby explains this, as well as making clear his preference for a full analytical understanding of a work: 'performers, then, are on a scale from being dimly aware of the analytical level... to finding it a constant and conscious issue, as is surely the case at the highest echelons of music-making and as has always been so in Western music.'⁶³ Although analytical understanding of a work can inform performers with regards to their approach to musical structure, it offers little insight in terms of nuances of style that are largely absent from the score; to this end performers have traditionally turned to performance practitioners rather than analysts.

⁶² Auer, L. (1921) *Op. cit.*, p. 71.

⁶³ Dunsby, J. (2002) *Op. cit.*, p. 233.

Performance Practice

Performance practice can be summarised as an area of research in which historical writings and other forms of period evidence are used to 'inform' performances. As the movement has grown in popularity and influence, particularly through the latter half of the twentieth century, many different trends associated with geographical locations or particular schools of performance have developed along the way. Lawson and Stowell explain that 'one of the most remarkable achievements of the [last] 100 years has been the probing investigation of musical styles of various eras, with stimulating and often surprising results. Tradition and intuition have been increasingly complemented by an unprecedented realisation of the practical value of primary sources.'⁶⁴ As the field has grown, so has the scope of its study, beginning with 'early' Renaissance and Baroque music and expanding its sphere of interest later and later until eventually reaching the twentieth century.⁶⁵ Whereas traditionally, in the field of analysis, 'performers and performances are largely irrelevant to both the analytical process and the analysis itself',⁶⁶ performance practice is generally characterised by a roughly equal emphasis on historical scholarship and performance, whereby research normally facilitates some kind of practical application.

Today's increasingly mainstream performance practice environment operates under the broad assumption that contemporary performances of a work can be enriched by a greater understanding of its historic context. This notion is not confined to contemporary musicology, however, as demonstrated by the following quote from the nineteenth-century German violinist Joseph Joachim: 'in order to do justice to a piece which he is about to perform, the player must first acquaint himself with the conditions under which it originated.'⁶⁷ Bowen similarly states from a modern perspective that 'creative expression flows from an understanding of the period styles

⁶⁴ Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 1.

⁶⁵ The majority of this expansion was necessarily later in time, as limitations in the availability of source material considerably impedes musicological research into the Medieval period and earlier.

⁶⁶ Lester, J. (1995) *Op. cit.*, p. 198.

⁶⁷ Joachim, J and Moser, A. (1902-5) *Violinschule: Vol. 3*, p. 5.

and conventions.⁶⁸ There is still much scope within the movement for different interpretations of the historical evidence, which has led to much healthy debate and stylistic divergence: 'even given all of the conventions of a period and all of our knowledge of performance practice, any score is capable of an indefinite number of sounding interpretations.'⁶⁹ Both analysis and performance practice provide the performer with potentially useful information with regards to different aspects of interpretation; however, performance practice tends to be rather less dogmatic in its approach insofar as players are most often presented with a wide array of options relating to performing style, rather than a single 'correct' way of approaching a piece based on its structure. This has not always been the case, as a number of performance practice scholars – particularly those of the 1980s – attracted criticism for being somewhat doctrinaire in their approach to historic performing styles. Taruskin is particularly scathing in his opinion of overly-prescriptive performance practitioners:

All too often the sound of a modern "authentic" performance of old music presents the aural equivalent of an Urtext score... Nothing is allowed to intrude into the performance that cannot be "authenticated". And this means nothing can be allowed that will give the performance... the authenticity of conviction.⁷⁰

Elsewhere, he argues that 'a movement that might, in the name of history, have shown the way back to a truly creative performance practice has only furthered the stifling of creativity in the name of normative controls.'⁷¹ Indeed, performers are not always looking for clear-cut answers, such as the structural imperatives offered by analysis; rather, as Bowen argues, they are more interested in 'the increased freedom of expression that can be afforded by an understanding of earlier styles and traditions.'⁷² This sentiment is also echoed by Taruskin, who proposes that 'it is not the elimination of personal choice from performance that real artists desire, but its improvement and

⁶⁸ Bowen, J. (1996) *Op. cit.*, p. 30.

⁶⁹ *Ibid.*, p. 31.

⁷⁰ Taruskin, R. (1984) 'The authenticity movement can become a positivistic purgatory, literalistic and dehumanizing', p. 6.

⁷¹ Taruskin, R. (1995) *Op. cit.*, p. 17.

⁷² Bowen, J. (1996) *Op. cit.*, p. 35.

refreshment. And for this purpose original instruments, historical treatises, and all the rest have proven their value.’⁷³

This freedom can be problematic in itself, however, in that performance practice often presents performers with a bewildering amount of information, as Robert Philip explains:

A music student who hopes to make a career as a performer is now bombarded with information from different, and often contradictory, sources. Traditional conservatoire teaching continues to be at the heart of most musicians’ training, but period performance is also now taught at many conservatoires, and there is also the evidence of recordings. How is a young musician to sift and balance these various sources? In theory a book like this ought to help. But what is fascinating for the scholar can be confusing for practical musicians, who need to find an answer before they step out onto the platform, not just a menu of possibilities.⁷⁴

The extensive and varied ‘menu of possibilities’ provided by contemporary performance practice means that performers are obliged to take a selective approach to the available information, based not only on the presumed validity of the source material, but also on how well it fits into their own aesthetic vision of the music. Peter Walls states that ‘the decision about what not to incorporate from the historical record in safeguarding the aesthetic presence of the music we perform is the beginning of musical judgement.’⁷⁵ Walls’ comment draws attention to yet another dichotomy for the performer: how to reconcile elements of historical performing style with our own contemporary aesthetic of performance. He goes on to assert that ‘the performer, whose task it is to realise that score for contemporary audiences, is especially

⁷³ Taruskin, R. (1995) *Op. cit.*, p. 150.

⁷⁴ Philip, R. (2003) ‘Brahms’s musical world: balancing the evidence’, in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 349.

⁷⁵ Walls, P. (2002) ‘Historical performance and the modern performer’, in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 32.

concerned with this act of mediation between an historic past and an aesthetic present.⁷⁶

This brings us to one of the key issues, not just in performance practice but music in general: the question of taste. The authenticity of any reconstruction of an historic performing style will always be intrinsically limited, given that it is impossible to remove contemporary tastes from both the performing and listening experience. We cannot help but listen to music through twenty-first century ears and all but the bravest of performance practitioners naturally attempt to make their interpretations pleasing to a contemporary audience. Lawson and Stowell explain that...

even if we could witness performances of large-scale works by Bach, Beethoven or Brahms, we should not necessarily want to adopt all their features, since to some extent our own taste would almost certainly continue to influence our interpretation.⁷⁷

This view is also held by Paul Hindemith, who states that 'our spirit of life is not identical with that of our ancestors, and therefore their music, even if restored with utter technical perfection, can never have for us precisely the same meaning it had for them. We cannot tear down the barricade that separates the present world from things and deeds past'.⁷⁸ In spite of the probable chasm that exists between contemporary taste and that of bygone eras, in endeavouring to understand historical performing styles we become better acquainted with our own. Bowen explains this using the analogy of language: 'even if we never fully master the new language, we inevitably understand our own better'.⁷⁹ As do Lawson and Stowell: 'those elements of style which a composer found it unnecessary to notate will always remain for us a foreign language, but eventually we may be able to converse freely within it as musicians, and so bring a greater range of expression to our interpretations, rather

⁷⁶ *Ibid.*, p. 24.

⁷⁷ Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 2.

⁷⁸ Hindemith, P. (1952) *A composer's world*, pp. 167-168. Cited in Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 11.

⁷⁹ Bowen, J. (1996) *Op. cit.*, p. 33.

than merely pursuing some kind of unattainable “authenticity”.⁸⁰ Taruskin similarly argues that, rather than striving for some kind of unattainable authenticity, the goal should be to enrich our own stylistic aesthetic: ‘historical knowledge should not simply be fixed and exhaustible, it will change and develop as our own priorities change. Our reception of any particular piece, composer or repertory will develop as we learn more about its creative context and this, in turn, will inform our evaluation of what is significant within the context.’⁸¹

The differences between contemporary tastes and those of earlier eras are particularly brought into focus when examining early recordings dating from the late-nineteenth and early-twentieth centuries. Whereas in the case of written sources it is relatively easy to selectively accommodate historical stylistic information into our own modern aesthetic of performance, these early recordings present us with the stark reality that not everything that was done in the past makes for comfortable listening to modern ears. Unfamiliar stylistic traits in early recordings, such as conspicuous *portamenti* or the lack of *vibrato*, are often considered far from pleasing by contemporary standards, explaining in part why the performance practice movement has been somewhat slow to embrace the reconstruction of late nineteenth- and early twentieth-century performing styles. Philip argues that ‘one of the reasons that reconstruction of earlier playing styles is so difficult is precisely the fact that we start from the viewpoint of late twentieth-century taste and habits, and use them as the basis for comparison.’⁸² We cannot – and arguably should not – wholly relinquish our own tastes when performing or listening to early recordings. Indeed, it is unsurprising that these comparatively novel styles of playing have not been instantly embraced by modern listeners; it can take time for new and innovative approaches to performance to be accepted into the musical mainstream, therefore it is reasonable to assume that the same would apply to a hitherto-unknown style of playing from the past.

⁸⁰ Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 2.

⁸¹ Butt, J. (2002) *Playing with history*, p. 95.

⁸² Philip, R. (1984) ‘The recordings of Edward Elgar (1857-1934): authenticity and performance practice’, p. 488.

Recordings as Evidence

The practical application of historical performance information traditionally extended only as far as music composed at the beginning of the twentieth century, when the sudden availability of recorded evidence changed the very nature of the discipline. Recordings differ considerably from the written evidence traditionally utilised by performance practitioners, in that they provide a record of how a performer *actually* sounded, albeit limited by technology, which takes away much of the room for debate that forms such an important part of the performance practice movement. There is less of an obvious compulsion for practical implementation in the form of an informed interpretation, as the performance has, in effect, 'already been done' and there would arguably be little point in simply replicating a recorded performance. However, specific stylistic traits, once defined, can still be incorporated into a contemporary performance with far more confidence regarding their legitimacy. Again, this represents a selective rather than an exhaustive approach, even more so given the daunting volume of performing information that recordings can offer the musicologist.

The problem of reconciling early recordings with modern tastes, along with concerns of how to deal with the potentially-limitless amount of information they contain, has led to musicology being relatively slow to embrace the opportunities that recorded evidence has to offer. Cook explains that 'musicologists are used to working with highly reduced data. Mainly, of course, I mean scores, which are such drastically simplified representations of musical sound that you almost want to say they *symbolize* rather than *represent* it: people don't play musical rhythms as written, often they don't play written pitches as written, and that's not because they play it wrong but because the notation is only an approximation.'⁸³ To compound the issue, a number of specific technological issues also arise when examining early recordings, which will be addressed in chapter two. In spite of such problems, however, recordings offer the musicologist an unprecedented degree of insight into past

⁸³ Cook, N. (2005) *Op. cit.*, p. 2.

performing styles and therefore play a crucial role in this study's investigation into rubato.

A 'Balanced' Approach to Analysis

This study utilises empirical computational analysis in order to investigate musical timing in thirty performances of the second movement from Brahms' Violin Concerto, Op. 77. This particular work has been selected as the subject for analysis because of its consistent popularity throughout the twentieth century, amongst audiences and violinists alike. As a result, the piece has an extremely healthy recorded legacy and, thanks to the ever-growing popularity of historical recording reissues, the majority of these recordings can be obtained relatively easily in modern digital formats. The second movement, *Adagio*, has been chosen in particular because rubato traditionally plays a far more important role in slower movements than in quicker ones, where the greater degree of underlying momentum demands a more-literal approach to rhythm. The *Adagio* contains only four markings from Brahms pertaining to alterations of tempo: a *ritardando* in bars 54 to 55, a *più largamente* at bar 56, a pause over the rest at the end of bar 63 and a *calando* from bars 75 to 78. As this study is primarily concerned with rubato, which is predominantly absent from the score, this minimalism in notated instructions means that the music provides a relatively 'clean slate' with which to examine different interpretive approaches to musical timing.

Empirical timing data has been obtained and subsequently analysed from thirty recordings of the *Adagio*, which represents roughly half of all the recordings made before 1973.⁸⁴ This sample is intended to be large enough to facilitate useful comparison, in order to identify any underlying trends or shared performance strategies, whilst still being small enough to allow each performance to be examined in detail.

⁸⁴ A complete list of these recordings is cited in Creighton, J. (1974) *Discopaedia of the violin*, p. 854.

To date, the vast majority of empirical studies of performance have been conducted in the field of music psychology, with musicological investigations tending to favour close-listening methods. Although the specifics of these contrasting approaches will be reserved for chapter two, the fundamental difference is one of ‘general’ versus ‘specific’. Empirical studies in music psychology tend to focus their attentions on the comparison of recordings, most frequently in order to see how they compare to some kind of preconceived formal model, whereas musicologists generally concentrate on the examination of individual examples, formulating any general conclusions more ‘loosely’, based on cumulative observations. Both approaches have their own distinct advantages; for instance, the use of empirical measurements lends itself particularly well to the comparison of large numbers of performances, whilst close-listening allows for the detailed discussion of individual examples in terms of their overall musical effect. In order to examine rubato in these recordings most usefully, both in terms of how they compare and what makes them individual, this study makes use of both approaches in tandem, which allows for the identification of common timing patterns across all thirty recordings, as well as the detailed examination of individual excerpts within their respective musical contexts.

Musical context is vital to any examination of expression; as Clarke states, ‘the force of musical expression must be understood by interpreting the function of any expressive features within the specific structural context that they occur. What may appear to be the same expressive element – an acceleration for instance – may have quite opposed functions depending on the structural context in which it occurs’.⁸⁵ According to Howatt, in order for such analysis to be informative, it ‘needs to clarify our relationship to the music, not congest it with information which we cannot relate to our listening or playing.’⁸⁶ This study therefore attempts to exploit the more-objective analytical and comparative potential of empirical analysis, whilst at the same time assuring that any resulting observations are firmly rooted within their specific musical contexts.

⁸⁵ Clarke, E. (2009) ‘The semiotics of expression in musical performance’, p. 99.

⁸⁶ Howatt, R. (1995) *Op. cit.*, p. 4.

The majority of analysis undertaken in this study involves the visual representation of empirical timing data, in the form of both tempo graphs and computerised animations that incorporate graphic analytical representations with the original recorded sound, thus making it possible to both 'see' and hear what is happening in performances simultaneously.⁸⁷ These visual representations represent a form of notation in themselves, 'stabilising a fleeting medium' by visually representing the way in which players approach timing within a specific musical context.⁸⁸ In addition to the potential for informing musicologists and professional musicians, Dirk-Jan Povel also highlights the pedagogical usefulness of such studies:

The type of research referred to here can be of great importance to the practice of music-teaching if it is able explicitly to formulate the manner in which the different dimensions of a melody are manipulated by the professional musician. On one hand this knowledge can help to make the pupil sensitive to those aspects of the acoustic signal that play a role in the interpretation of music; on the other hand it enables him to gain an accurate idea of what the professional player does while interpreting a piece of music.⁸⁹

Performers are used to interpreting visual representations of music, both in terms of traditionally-notated scores and more-experimental modern graphic creations; therefore this kind of visual medium seems an appropriate method to communicate information with regards to expressive timing, both for professional players looking to 'inform' their performances of this kind of repertoire, and aspiring students who are in the process of developing their understanding of the role rubato plays in interpretation.

Although no recordings of the violin concerto exist from Brahms' lifetime – sound recording was still very much in its infancy with the majority of recordings consisting of either short pieces or excerpts⁹⁰ – playing styles of the early twentieth century are

⁸⁷ A full explanation of this software is given in chapter 2.

⁸⁸ Taruskin, R. (1995) *Op. cit.*, p. 151.

⁸⁹ Povel, D-J. (1977) 'Temporal structure of performed music: some preliminary observations', p. 310.

⁹⁰ For more on the time limitations of early recording methods see 'Time-limits and side-joints', in Philip, R. (2004) *Performing music in the age of recording*, pp. 34-38.

chronologically far closer to that of Brahms' era than they are to those of today and can therefore provide clues as to how he might have expected his own music to be performed; as Philip says, 'one central point is indisputable: the styles of the early 20th century did not arise overnight.'⁹¹ The earliest recording considered in this study was made by Fritz Kreisler in 1927, 86 years ago at this study's time of writing but just 48 years after the piece's 1879 Leipzig premiere by Joachim. However, as Taruskin states, contemporary performance has been rather slow to embrace the reconstruction of early twentieth-century playing style: 'We have a much better idea of what music sounded like in Tchaikovsky's day than we will ever have of what it sounded like in Bach's day, and yet we do not hear performances of Tchaikovsky in our own day that sound like the Elman Quartet, for example, whose recorded interpretation of the famous "Andante cantabile" surely represents the kind of approach the composer expected (intended?).'⁹²

The Importance of Written Sources

Although recorded evidence provides us with perhaps the strongest evidence relating to historic performing styles, this study also attempts to reconcile this aural evidence with written evidence. Written accounts pertaining to performing style have traditionally provided a crucial resource for research in the field of performance practice and it seems both prejudicial and somewhat illogical to completely disregard this kind of evidence in favour of sole-study of recorded performances. Just as the score represents the 'composer's voice' on paper, written accounts and method books similarly embody the 'performer's voice' and to marginalise them would insinuate that the opinions or recommendations of performers are somehow irrelevant. One problem that can lead to the marginalisation of written evidence is that it does not always correspond with practice; although aspects of performance described in written accounts are often recognisably manifested in recorded performances, there are numerous instances where one would seem to contradict the other. One such

⁹¹ Philip, R. (1984) *Op. cit.*, p. 489.

⁹² Taruskin, R. (1995) *Op. cit.*, p. 151.

contentious issue that has been well-documented relates to the theory of ‘compensating’ rubato, in which seemingly-strict theoretical models outlined in pedagogical treatises and substantiated in other sources appear to be at odds with much recorded evidence.⁹³ There are a number of explanations for such discrepancies between theory and practice; writings from the nineteenth and early-twentieth centuries are often difficult to interpret due to their use of florid language, especially with regards to aspects of expression, and their content can also be highly subjective. Lawson and Stowell give us some idea of the difficulties in committing complex expressive ideas to paper:

The nature of artistic performance is so complex, with all it involves in the way of fine shading of rhythm, tempo, nuance and expression, that such ornaments defy exact description or definition. Attempts to do so in tables, words or musical notation will have been intended as rough outlines rather than exact designs, memory aids rather than definite models.⁹⁴

They go on to explain that pedagogical sources are not always up-to-date with current practice and should therefore be approached with caution:

Instrumental and vocal treatises offer the most direct access to fundamental technical instruction, interpretation and more general matters such as notation, music history, expression, taste and aesthetics. However, their value as sources must not be exaggerated, for most present the fruits of many years of thought, experience and observation and incorporate instructions that may lag well behind actual practice.⁹⁵

As a result of such issues involving the interpretation of written evidence, these sources are all too often marginalised if contradicted by recorded evidence. However, both recorded evidence and written evidence can be usefully used in conjunction so long as both are considered on their own terms. Differences between theory and practice are significant and not just anomalies to be explained away, as Cooke states: ‘the significance of a prescriptive model (such as “compensating rubato”) lies precisely

⁹³ This issue will be examined in more detail in chapter 1.

⁹⁴ Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 25.

⁹⁵ Lawson C. and Stowell, R. (1999) *Op. cit.*, p. 23.

in the gap between theory and practice.⁹⁶ Once again, contextualisation is key to our understanding of these period written accounts, which is one of the primary aims of the following chapter.

⁹⁶ Cook, N. (1999) *Op. cit.*, p. 251.

Chapter 1. Written Evidence of Rubato in the Late-Nineteenth and Early-Twentieth Centuries

...an inelastic time-measurer can never give us characteristic Bach or Beethoven, Mozart or Wagner. Metronome marks are never more than approximate at best.¹

This chapter examines written sources relating to rubato dating from the late-nineteenth and early-twentieth centuries, in order to give a historical-stylistic background to the device's use during the period considered in this study.² Differing attitudes towards rubato are presented, along with specific types of rubato that are alluded to in these texts. Extensive research to this effect has already been undertaken, most comprehensively by Richard Hudson in *Stolen time: the history of tempo rubato*, with David Milsom and Robert Philip concentrating their efforts on literature from the nineteenth and early-twentieth centuries.³ Considering the wide array of primary sources that have been compiled within these previous studies, this chapter attempts something of a fresh approach to this material, in order to offer a broad overview of the subject with a particular emphasis being placed on sources pertaining to string playing.

As the focus of this study is performances of the *Adagio* from Brahms' Violin Concerto, Op. 77, it is of particular relevance from a performance practice standpoint to examine writings by the German violinist Joseph Joachim, whose comments are particularly pertinent to this study as he was a long-time friend of Brahms who worked closely with the composer in revising a number of Brahms' compositions including, most notably, his violin concerto.

¹ Ffrangcon-Davies, D. (1906) *The singing of the future*, p. 163.

² As outlined in the introduction, during the course of this study the term 'rubato' is used in a modern sense, meaning 'flexibility of tempo'.

³ Hudson, R. (1994) *Stolen time: the history of tempo rubato*, Milsom, D. (2003) *Theory and practice in late nineteenth-century violin performance: an examination of style in performance, 1850-1900* and Philip, R. (1992) *Early recordings and musical style*.

1.1 Attitudes to Rubato

Flexibility of tempo has long been considered a vital constituent of performing style, particularly in the context of Romantic music, and the vast majority of nineteenth-century performers and musical writers strongly rejected the idea that music should proceed at a uniform speed. In Richard Wagner's famous 1869 essay *Über das Dirigieren*, he states that 'we may consider it established that in classical music written in the later style modification of tempo is a *sine qua non*.'⁴ In 1910, the pianist Alfred Johnstone describes the importance of rubato to the 'modern emotional style' of composition:

Emotion is the goal; and if beauty of design occurs in addition, there is no great harm. Capriciousness, then, is a characteristic of this modern emotional style; moods vary capriciously, and constant variations in the *tempo* is [sic] one of the means adopted to interpret these capricious moods.⁵

Indeed, the increasing emotiveness of expression in compositions as the nineteenth-century progressed created far more opportunity for the expressive alteration of musical time, as inherent stylistic values of the Classical period such as poise and formal symmetry gradually became eclipsed by the romantic ideal of the composer's emotional outpouring.

A number of writers of this period caution that flexibility of tempo is more appropriate in 'modern' rather than in earlier music, which is an outlook that persists in today's 'historically-informed performance' movement. Hans Wessely, a well-known Austrian violinist, argues that 'more recent (French) compositions demand greater freedom of phrasing and time changes,' as well as warning against excessive freedom of tempo in Classical repertoire.⁶ Joseph Joachim and Andreas Moser clearly advocate rubato in the third volume of their 1902-5 *Violinschule*, where they criticise 'the deadly dullness of the metronomic tempo'; however, the following passage exhibits a somewhat

⁴ Wagner, R. (1887) *Über das Dirigieren*. Translated by W. Ashton Ellis in *Richard Wagner's prose works*, p. 320.

⁵ Johnstone, J. A. (1910) *The art of teaching pianoforte playing*, p. 114.

⁶ Wessely, H. (1913) *A practical guide to violin-playing*, p. 112.

cautionary stance with regards to its use in earlier music, due to propulsive influence of the continuo that characterises much Baroque music:

As freedom is not caprice but rather the inward assimilation of and conformity to Law, it is hardly necessary to point out with what extreme caution this Liberty must be used. For apart from the fact that even in the performance of more modern music much harm can be done to the character of a piece by the use of unjustifiable liberties, the apparently inexorable strictness of the continuo is especially distinctive of the older classical art.⁷

A similar warning is given by the pianist Franklin Taylor:

All such variations of tempo... should be employed very sparingly, if at all, in the works of earlier composers, the measured and strict character of whose music demands a like strictness of time. Perhaps the only place in which a *ritardando* is permissible in the music of Bach is at the close of a movement...⁸

At the beginning of the nineteenth century the composer and pianist Joseph Czerny explains how rubato might be incorporated during the course of a movement, specifying the following scenarios:

1. Return of the subject.
2. In phrases to be separated from the melody.
3. On longer or accented notes.
4. When transferring to a different theme.
5. After a fermata.
6. On a diminuendo in faster music.
7. Where an ornamental note is to be played 'tempo giusto'.
8. On well-marked crescendo beginning or ending an important passage.
9. In passages where the performer is given free play.
10. Expressivo [sic].
11. At the end of a shake or cadence.⁹

⁷ Joachim, J and Moser, A. (1902-5) *Violinschule: Vol. 3*, p. 16.

⁸ Taylor, F. (1887) *Technique and expression in pianoforte playing*, p. 73.

⁹ Czerny, J. (c.1825) *Clavierschule*, p. 206. Cited in Milsom, D. (2003) *Op. cit.*, pp. 154-155.

These examples predominantly describe discrete musical events, suggesting that in the early-nineteenth century rubato may have been used in the manner of an ornament rather than continuously as Mahler describes. Numbers 9 and 10 are a lot more ambiguous than the other specific situations cited by Czerny; it is unclear whether ‘free play’ refers to passages which are specifically marked as *tempo rubato* or *tempo ad lib.* by the composer, as was very occasionally the case, or if it refers to passages where the melodic line is complemented by a simple accompaniment that might allow more easily for flexibility of tempo without the risk of disturbing the textural ensemble. Although ‘expressivo’ playing is seen as an accepted context, no further detail is given and its relegation to the bottom of Czerny’s list might suggest that he did not see it as a central precept, although it perhaps more probable that he considered such an open-ended category far too complex an issue to discuss within the confines of that particular chapter. As with other elements of expressive performance such as *portamento* and *vibrato*, rubato is inextricably associated with subjective issues of taste, which has led to much debate concerning what constitutes appropriate usage, ever since the earliest references to the device began to appear in musical writings of the mid-eighteenth century.¹⁰

There is much evidence that many leading composers of the early-twentieth century advocated flexibility of tempo in the performance of their own works. Gustav Holst wrote the following regarding ‘Mars’ in a letter to Adrian Boult after hearing him conduct the premiere of *The Planets* in 1918: ‘You made it wonderfully clear – in fact *everything* came out clearly that wonderful morning. Now could you make more row? And work up more sense of climax? Perhaps hurry certain bits? Anyhow it must sound more unpleasant and far more terrifying.’¹¹ This comment strongly suggests that Holst, although evidently pleased with the lucidness of Boult’s performance, would have preferred something of a less-reserved approach, both in terms of dynamics and tempo. His use of language, in particular ‘row’ and ‘hurry’, is somewhat striking, as such words seem to imply a certain amount of disorganisation; one could infer from such a statement that, at least in this case, Holst was more concerned with the

¹⁰ Hudson, R. (1994) *Op. cit.*, p. 2.

¹¹ Boult, A. (1970) ‘Interpreting “The Planets”’, p. 263.

expression of his music's character than achieving an overall degree of precision.

Gustav Mahler, although best-known as a composer, was also extremely active as a conductor and performer. According to his friend the violinist and violist Natalie Bauer-Lechner, Mahler is reported to have said:

All the most important things – the tempo, the total conception and structuring of a work – are almost impossible to pin down. For here we are concerned with something living and flowing that can never be the same even twice in succession. That is why metronome markings are inadequate and almost worthless; for unless the work is vulgarly ground out in barrel-organ style, the tempo will have already changed by the second bar... What matters is that the whole should be alive, and, within the bounds of this freedom, be built up with irrevocable inevitability.¹²

This observation is particularly notable in that it does not speak of flexibility in terms of rubato being applied discriminately within certain musical contexts; rather he describes music as being in a constant state of fluctuation, thus implying that flexibility is an intrinsic part of the musical fabric. Richard Strauss was also actively involved in performance as a conductor. Leo Wurmser recalls a particular performance of the prelude to *Tristan und Isolde*, in which Strauss employed flexibility throughout, in spite of there being few markings pertaining to tempo in the score:

He took the whole prelude *quasi rubato*. In the first section many of the rubatos are indicated, though not always observed, but after the third bar of the section in three sharps Wagner has indicated no further change of tempo until the *allmählich etwas zurückhaltend* towards the end.¹³

The extent of Strauss's 'extra-notational' flexibility is particularly significant, as one can infer from it that relatively little of his overall conception of rubato was impelled by expressive indications in the score. Elgar frequently commented on his dissatisfaction concerning overly-rigid performances of his own works:

¹² Bauer-Lechner, N. (1923) *Erinnerungen an Gustav Mahler*, p. 46.

¹³ Wurmser, L. (1964) 'Richard Strauss as an opera conductor', p. 8.

I only know that my things are performed – when they go as I like – elastically and mystically people grumble – when they are conducted squarely and sound like a wooden box these people are pleased to say it's better.¹⁴

Although it is not altogether clear whether the 'people' to which Elgar refers are audience members, critics or performers themselves, this comment suggests that not everyone may have shared Elgar's seemingly-liberal attitude towards flexibility of tempo. As Philip explains, Elgar's recorded legacy exhibits a highly volatile approach to tempo and a large number of tempo changes that Elgar employs in his own recordings are not indicated in the score, in spite of him writing far more by way of performing instructions than most other composers of this period.¹⁵ The metaphor of 'elasticity' in reference to musical timing is one that crops up repeatedly in writings of this period and will be explored later in more detail.

In spite of coming from an earlier and very different musical tradition, Franz Liszt also appears to have been a staunch advocate of rubato, as recounted here by Julius Kapp:

Answering the protesting stance that his emotional and probably showy gesticulation had caused at the musical festival at Karlsruhe in 1853, he wrote against the "efficient time-beaters" that in modern music, "the crude representation of the measure of each of its parts might interfere with sense and expression... I do not see the advantage of a conductor adopting the function of a windmill... we are helmsmen not galley slaves."¹⁶

This analogy of 'helmsmen not galley slaves' exemplifies the importance of individual interpretation to the nineteenth-century performing aesthetic, implying as it does that the performer's role involves far more than simply reproducing the written notation. Edward Kravitt explains that Franz Liszt's liberal approach to rubato, although 'so controversial in 1853', became 'acknowledged as correct' by the end of the century, as

¹⁴ Letter, 1 July 1903, in Young, P. M. (1965) *Letters to Nimrod from Edward Elgar*, p. 192. Cited in Philip, R. (1992) *Op. cit.*, p. 10.

¹⁵ Philip, R. (1984) 'The recordings of Edward Elgar (1857-1934): authenticity and performance practice', pp. 483-487.

¹⁶ Kapp, J. (1909) *Franz Liszt*, p.273. Cited in Milsom, D. (2003) *Op. cit.*, p. 158.

performers adapted their style of delivery to the increasingly-expressive demands of late-Romantic repertoire:

By the end of that century the concept of tempo modification had run its complete course, from Hummel's 'almost imperceptible' kind (1828) to Kullak's clearly 'perceptible' type (1898)... For unlike his immediate predecessors the late romantic insisted that tempo must be flexible, that it must change with the emotional content of a piece.¹⁷

As the nineteenth century progressed, greater emphasis seems to have been placed on the emotional potential of rubato, as highlighted here by the Swiss theorist Mathis Lussy in 1884: 'Now we have observed that the warmest partisans for the uniform and regular rate of time are precisely those who have no feeling for expression.'¹⁸ Dolmetsch similarly argues in 1916 that 'it is obvious that emotional feeling, if there is any, will cause the player to linger on particularly expressive notes and to hurry exciting passages.'¹⁹ Indeed, Mahler's romantic ideology of the music being something 'living and flowing' is one that resonates with the views of many other performers and theorists of the late-nineteenth century, who see the device as fundamental to the expression of musical feeling.

Although the vast majority of conductors in the early decades of the twentieth century appear to have manipulated tempo a great deal, this is not to say that they were without their critics. Elgar's aforementioned complaint in 1903 that 'I only know that my things are performed – when they go as I like – elastically and mystically people grumble' suggests that by the beginning of the twentieth century there were many who preferred a relatively 'cleaner', more literal approach to interpretation. As with other constituents of expressive playing, such as *vibrato* and *portamento*, that are similarly dependent on taste, there was a schism between those who favoured more and those who preferred less. Stravinsky, Schoenberg and Ravel represent the chief exponents of a new, more-literal attitude to interpreting music which arose in the

¹⁷ Kravitt, E. (1973) 'Tempo as an expressive element in the late-Romantic lied', p. 504.

¹⁸ Lussy, M. (1884) *Traité de l'expression musicale: accents, nuances et mouvements dans la musique vocale et instrumentale*, p. 163. Cited in Milsom, D. (2003) *Op. cit.*, p. 154.

¹⁹ Dolmetsch, A. (1915) *The interpretation of the music of the XVIIth and XVIIIth centuries*, p. 284.

early decades of the twentieth century, arguably as a reaction against the liberal attitude to interpretation that had become the norm. Ravel is famously quoted by the pianist Marguerite Long as saying ‘I do not ask for my music to be interpreted, but only for it to be played’ and she goes on to describe markings in the music of Debussy and Ravel as ‘imperiously exacting’.²⁰ Generally, Long seems to favour subtlety of expression over overt flexibility of tempo in Ravel’s music, stating that *rallentandi* in the second movement of his Sonatine ‘must come from nuance and from sonority rather than from a real change of speed.’²¹ It is difficult to know just how much weight these comments carry in terms of Ravel’s own views on the performance of his compositions; however, Long’s opinions are important in their own right, as an eminent performer who worked closely with a number of composers including Ravel, Fauré and Chopin. Her description of *rallentando* coming ‘from nuance and from sonority’ is somewhat ambiguous, however, as is the following advice concerning rubato in the music of Debussy and Chopin: ‘This delicate rubato is difficult to obtain in both Chopin and Debussy. It is confined by a rigorous precision, in almost the same way as a stream is the captive of its banks. Rubato does not mean alteration of time or measure, but of nuance and *élan*.’²² Quite how rubato can take place without the alteration of time to some extent is enigmatic to say the least, but it may well be that in describing ‘nuance and *élan*’, Long is referring to small-scale rubato that does not affect the general tempo. Ernest Newman remembers the following relating to Elgar:

More than once he protested to me that all his music required was to be left alone to say what it had to say in its own way: the expression was in the music and it was not only unnecessary but harmful for the conductor to add to it an expression of his own.²³

Elgar’s comment comes as something of a surprise, especially given his own manipulations of tempo at points where no such effect is indicated in the score; this view seems to align more closely with Ravel’s request for his music to be ‘played’ rather than ‘interpreted’ than Elgar’s previous comment stating that he prefers his music to be performed ‘elastically and mystically’. It is more than likely, however, that

²⁰ Long, M. (1971) *Au piano avec Maurice Ravel*, p. 16.

²¹ *Ibid.*, p. 84.

²² Long, M. (1960) *Au piano avec Claude Debussy*, p. 19. Cited in Philip, R. (1992) *Op. cit.*, p. 44.

²³ *Sunday Times*, 25 October 1933, p. 320. Cited in Philip, R. (1992) *Op. cit.*, p. 10.

Elgar's criticism is levelled at interpretations that are not to his own taste. Schoenberg exhibits a more vehement disdain for inappropriate use of rubato by conductors in his 1926 essay 'On metronome markings':

Anyone who has learned at his own expense what a conductor of genius is capable of, once he has his own idea of a work, will no longer favour giving him the slightest scrap more freedom. For instance, if such a man has got into his mind 'a powerful build-up', which means he has found a place where he can begin too slowly and another where he can finish too fast, then nothing can hinder him any longer in giving rein to his temperament.²⁴

The animosity inherent in these words certainly suggests that this statement represents a reaction against conductors who were less discriminate in their use of rubato, as seems increasingly to have been the case around the beginning of the early twentieth century. Although this may initially appear to be an outright attack on interpretive freedom, Schoenberg's scathing depiction of the 'conductor of genius' seems essentially to be making the same point as Bauer-Lechner and Elgar, albeit in a more hostile manner, that flexibility of tempo can be detrimental if applied 'distastefully'. A far more transparent attack on interpretation, however, famously appears in Stravinsky's discussion of the premiere of his ballet *Petrushka* in 1911, under the baton of Pierre Monteaux:

He knew his job thoroughly and was able to achieve a very clean and finished execution of my score. I ask no more of a conductor, for any other attitude on his part immediately turns into *interpretation*, a thing I have a horror of. The *interpreter* of necessity can think of nothing but *interpretation*, and thus takes on the garb of a translator, *tranduttore-traditore*; this is an absurdity in music, and for the interpreter it is a source of vanity inevitably leading to the most ridiculous megalomania.²⁵

Although Stravinsky does not cite flexibility of tempo specifically in this passage, there is evidence that he revised a number of his scores during the 1940s, most notably *The Firebird* and *Petrushka*, with the view to limit the amount of interpretive freedom

²⁴ Schoenberg, A. (1950) *Style and idea*, p. 342.

²⁵ Stravinsky, I. (1936) *An autobiography*, p. 34.

given to conductors. Philip usefully tabulates the alterations made to the 1947 score of *Petrushka*, in which a number of *accelerandi* and *stringendi* are completely removed. New markings are added, such as *tempo di rigore* and *non-accelerando!* [Stravinsky's exclamation], which clearly imply that, through modification of his notation, Stravinsky was attempting to reduce the potential for flexibility of tempo in certain passages.²⁶ Mahler appears to have employed a comparable degree of meticulousness in his approach to the notation of rhythm:

You wouldn't believe how anxiously and carefully I proceed in my compositions. In fact, I have worked out quite a new orchestral technique – the direct result of my long experience. For instance, when the musical meaning requires consecutive notes to be played disconnectedly, I don't leave this up to the common sense of the players... In order that there should not be the slightest inaccuracy in rhythm, I have racked my brains to notate it as precisely as possible. Thus I avoid indicating the shortness of notes, or the space between them, by dots or other staccato marks. Instead, everything is spelled out in detail by means of the note values and rests.²⁷

Stravinsky and Elgar's comments seem to represent something of a reversal of the aforementioned late-Romantic trend towards the use of increasingly-abstract expressive markings.²⁸ It appears that they have both found this newfound notational language somewhat inadequate in terms of the precise communication of their musical intentions, which has resulted in them employing a greater degree of specificity in their scores in order to reduce the potential for interpretive liberties.

Pioneers in the world of conducting who reacted against the tradition of flexible tempos in the early twentieth century, such as Arturo Toscanini and (Paul) Felix Weingartner, were notably stricter in their control of tempo than their contemporaries, even though their recordings exhibit a far more liberal approach than most of today's conductors. George Szell explains that Toscanini 'wiped out the

²⁶ Philip, R. (1992) *Op. cit.*, p. 14.

²⁷ Bauer-Lechner, N. (1923) *Op. cit.*, pp. 45-46.

²⁸ See introduction, p. 4.

arbitrariness of the post-romantic interpreters. He did away with the meretricious tricks and the thick incrustation of the interpretive nuances that had been piling up for decades.²⁹ The following statement by Weingartner regarding ‘tempo-rubato conductors’ criticises those who manipulate tempo beyond the boundaries of his own taste:

They make the clearest passages obscure by hurling out the most insignificant details. Now an inner part of minor importance would be given a significance that by no means belonged to it. Where a gradual animation or a gentle and delicate shading off is required, often however without even that pretext, a violent spasmodic *accelerando* or *ritardando* was made.³⁰

Philip cites a number of cautionary instructions relating to rubato in a vocal context; Giovanni Clerici, who advocates slight variations in pulse ‘for the purposes of expression’ but objects to those who ‘interrupt the rhythm at any point they please’, argues that ‘as a whole, the pulsation goes throughout a movement at a given rate.’³¹ The singer and lecturer Malcolm Sterling Mackinlay takes a similar ‘less is more’ approach, advising that modifications of tempo...

must be made with the utmost discretion. To launch out into making perpetual little alterations in time throughout a piece, quickening here, slowing up there, without rhyme or reason, is the sign of a poor singer. The great artist is a great timist, and is found to interfere but little with the tempo of a piece.

Consequently when he does so, he produces a marked effect...³²

In particular, extra-notational *accelerandi* appear to have fallen out of fashion by around the 1930s. Eric Blom furthers Elgar’s elastic metaphor somewhat tenuously in order to assert that speeding up is far less acceptable than slowing down in performing Beethoven’s music:

Elasticity is the life of music, and an elastic will stretch, but cannot be pushed together. In other words, and words applied to Beethoven, the pace of any

²⁹ Schoenberg, H. (1968) *The great conductors*, p. 252. Cited in Philip, R. (1992) *Op. cit.*, p. 13.

³⁰ Weingartner, F. (1895) *Über das Dirigieren*, pp. 27-28. Cited in Hudson, R. (1994) *Op. cit.*, pp. 314-5.

³¹ Clerici, G. (1906) *Perfection in singing*, p. 133. Cited in Philip, R. (1992) *Op. cit.*, pp. 7-8.

³² Sterling Mackinlay, M. (1910) *The singing voice and its training*, p. 156. Cited in Philip, R. (1992) *Op. cit.*, p. 8.

movement of his, slow or fast, can often be slightly spread out to an advantage, whereas it can scarcely ever be tightened or hurried with anything but an untidy, scatter-brained effect.³³

This metaphor of 'elasticity', although commonplace in theoretical writings relating to rubato, is somewhat problematic given the potential for differing interpretations. The main difficulty with Blom's use of the metaphor is that he sees slowing as 'stretching' and speeding up as 'pushing together'. Whilst this description holds good in relation to its description of musical time, his understanding of physical elasticity negates the element of tension; whilst a stretched elastic may be physically longer than a relaxed one, this lengthening creates an increase in tension which seems contrary to the sense of relaxation inherent in the majority of musical slowing. In terms of tension, it is perhaps more logical to consider acceleration as analogous with the stretching of elastic, in that it creates an increase in tension that almost inevitably necessitates some kind of subsequent relaxation.

It is clear that the early-twentieth century represented something of a divergence in attitudes to interpretation. Whilst the likes of Mahler, Elgar and Strauss can be seen to have continued in the late-Romantic tradition of interpretational freedom, which is of course very much in keeping with their respective compositional styles, the newer, more-conservative school of interpretation, as represented by Stravinsky, Schoenberg and Ravel, considered the performer increasingly as an intermediary whose job it is to realise the composer's score, rather than imposing their own personality onto a composition. Whilst these two schools of thought may appear to be diametrically opposed, in reality they are far from mutually exclusive and views such as those expressed above are in great need of contextualisation. Elgar, for instance, advocated flexibility of tempo in his music but only if it was executed in a manner to his liking; similarly, the vast majority of criticism levelled at interpretive rubato from the likes of Stravinsky and Schoenberg is not objecting to the device *per se*, rather to its 'misuse'. Taste and motivation are two key factors here; each of these writers has their own conception of what 'tasteful' use of rubato entails and the motivation behind their

³³ Blom, E. (1938) *Beethoven's Piano Sonatas discussed*, p. 122.

comments is different in each instance. Holst, for example, appears to be 'pro-flexibility' because he is encouraging Boult towards a freer interpretation, whereas Stravinsky appears to be more 'anti-flexibility' because he has clearly experienced conductors employing it to a greater extent than his taste would dictate. For this reason, it is impossible to be sure to exactly what extent these writers advocated rubato in their own and other music, particularly given that we are reading these accounts from a twenty-first century viewpoint; what was considered 'scarcely perceptible' rubato at the beginning of the twentieth century may conceivably be considered far too much by contemporary standards, therefore pinning down such subjective remarks is fraught with difficulty. What is clear from such heated comments, however, is that each composer, conductor and theorist had their own clear view as to what was considered to be an 'acceptable' interpretation. The increase in interpretational license amongst conductors at the end of the twentieth century obviously created more potential for disagreement and the strength of views, particularly from composers with reference to their own works, highlights the importance of attempting to understand a particular composer's attitude if one is to create a performance that corresponds to their musical aesthetic.

Although the degree to which writers advocated flexibility of tempo in these writings is bound up in complex, subjective issues of taste and motivation, the manner in which it was executed is slightly easier to pin down, as will be discussed in the following section.

1.2 Types of Rubato

From around the nineteenth century onwards it has been the norm for composers to notate large-scale alterations of tempo in the score, using a vast gamut of terminology, including indications such as *largamente*, *allargando*, *animato*, *accelerando*, *stringendo*, *rallentando*, *ritardando* and *calando*, to name but a few of the most common Italian variants. However, as highlighted previously, most flexibility is

employed by performers without any instruction to that effect from the composer and, as a result, the way that rubato is employed can vary hugely between two performances of the same piece. As with all non-notated elements of performing style, the resulting interpretation is governed by a combination of a performer's personal taste, along with wider contextual issues of the prevailing performing style of a particular time and place.

In spite of the apparent variety in descriptions of rubato that have appeared in dictionaries of music, performing treatises and other written sources, on closer inspection they all fall roughly into one or more of the following three general categories, each of which will be discussed in turn:

- *Accelerando* and *rallentando* ('later' rubato)
- Rhythmic alteration
- Independence of melody from accompaniment ('earlier' rubato)

1.2.1 *Accelerando and rallentando ('later' rubato)*

This kind of rubato, referred to by Hudson as the 'later rubato', involves either quickening or slowing the tempo, or a juxtaposition of the two, for the purposes of expression.³⁴ One of the numerous accounts of Mahler's conducting from Bauer-Lechner describes her reaction to an unusually slow performance of the overture from Mozart's *Die Zauberflöte*:

The most extraordinary thing... is that although Mahler has every *cantilena* passage very *sostenuto*, never rushing like other conductors, his performances are usually shorter than theirs. (In a Wagner opera this can sometimes make as much as half an hour's difference!) "That", Mahler told me, "is because most conductors don't understand how to distinguish what is unimportant from

³⁴ Hudson, R. (1994) *Op. cit.*, p. 4.

what is important. They put the same emphasis on everything, instead of passing lightly over what is less significant.”³⁵

This idea of distinguishing ‘what is unimportant from what is important’ draws attention to the delineative importance of rubato, as a means of highlighting musical features for the listener, whilst allowing less important events to slip by relatively unnoticed. The remark also suggests that Mahler may have been more selective in his approach to rubato than others, ‘passing lightly’ over music he does not deem important enough to emphasise using rubato. Philip cites a number of sources that refer more-specifically to the relationship between rubato and phrase structure. Riemann’s definition of the device in his *Musik-Lexicon* of 1897 involves both emotional and structural imperatives operating in tandem; he describes rubato as the ‘free treatment of passages of marked expression and passion, which forcibly brings out the *stringendo-calando* in the shading of phrases, a feature which, as a rule, remains unnoticed.’³⁶ This idea of *stringendo-calando* shaping within phrases is furthered in his entry regarding expression:

First of all, in the matter of small changes of *tempo*, it may be remarked that hurrying implies intensification, and drawing back the reverse; hence, as a rule, a slight urging, pressing forward is in place when the musical development becomes more intense, when it is positive; and, on the other hand, a tarrying, when it approaches the close. These changes must naturally be exceedingly minute in detached musical phrases, but can already become more important in a theme of a certain length; while for whole movements they are of such an extent as to be seldom ignored in the notation.³⁷

Riemann’s description of ‘intensification’ followed by ‘tarrying’, as a means of shaping both phrases and more substantial sections of music, represents an elucidation of the more-abstract ‘give and take’ analogy of elasticity that appears so often in writings concerning rubato. His final sentence also suggests that small-scale *accelerando-rallentando* shaping within phrases operates in essentially the same way as larger-scale changes of tempo, many of which are notated by the composer as *ritardandi* or

³⁵ Bauer-Lechner, N. (1923) *Op. cit.*, p. 95.

³⁶ Riemann, H. (1882) *Musik-Lexicon*, p. 673. Cited in Philip, R. (1992) *Op. cit.*, p. 38.

³⁷ Riemann, H. (1882) *Op. cit.*, p. 226. Cited in Philip, R. (1992) *Op. cit.*, p. 7.

rallentandi at the end of sections or movements. Riemann's notion of '*stringendo-calando* shading' is echoed in Behnke and Pearce's *Voice-Training Primer* of 1893, which draws a direct link between use of rubato and the melodic contour of a phrase:

Ascending phrases, as a rule, should be sung *crescendo*, and with a slight quickening of speed (tempo rubato)... Descending phrases should, on the other hand, be sung *diminuendo*, and with a slight slackening of speed (tempo rubato).³⁸

Clerici describes the 'emotional contour' of a phrase, as opposed to referring solely to matters of pitch:

These variations will consist of slight and almost unnoticeable accelerations, followed by retards (which just balance each other, the hurrying being in approaching a climax, and the retard to allow time to cool down afterwards)...³⁹

Both Riemann and Clerici recommend that the shaping of phrases should go almost unnoticed, which clearly implies a more-subtle use of rubato than the kind of 'violent spasmodic *accelerando* or *ritardando*' abhorred by Weingartner. Clerici also advises that the degree of speeding up and slowing should 'just balance each other', which suggests that the overall length of a phrase would not be affected by this kind of rubato. However, opinions on this issue are not entirely consistent, as will be examined in the following section regarding 'compensating' rubato.

1.2.2 Compensating rubato

Milsom cites a number of definitions from dictionaries of music, thus highlighting a clear change in thinking during the late-nineteenth and twentieth centuries with regards to the manner in which rubato should be executed.⁴⁰ The 1980 edition of *The New Grove Dictionary of Music* offers a definition of rubato to which modern performers would be able to relate: "'Stolen": of tempo, extended beyond the time

³⁸ Behnke, E. and Pearce, C. W. (1893) *Voice training primer*, p. 65. Cited in Philip, R. (1992) *Op. cit.*, p. 39.

³⁹ Clerici, G. (1906) *Op. cit.*, p. 133. Cited in Philip, R. (1992) *Op. cit.*, p. 39.

⁴⁰ Milsom, D. (2003) *Op. cit.*, pp. 151-152.

mathematically available; thus slowed down, stretched or broadened.’⁴¹ This contemporary understanding of the device implies a slowing down, without any attempt being made to compensate for the lost time by speeding up elsewhere, hence the idea of time being ‘stolen’; however, earlier editions of *Grove* describe rubato more in terms of a general ‘give and take’ of tempo, in which the ‘stolen’ time is ‘paid back’ elsewhere so that the underlying tempo of the musical fabric is left undisturbed. The very first edition, which dates from 1879-89, accordingly defines the term as:

the opposite of strict time, and indicates a style of performance in which some portion of the bar is executed at a quicker or slower tempo than the general rate of movement, the balance being restored by a corresponding slackening or quickening of the remainder.⁴²

Many theoretical models of compensating rubato insist that any degree of slowing should be compensated for fully, with the result that the overall tempo is left undisturbed. For instance, the pianist Josef Hofmann instructs that ‘what you shorten of time in one phrase or part of a phrase you must add at the first opportunity to another in order that the time ‘stolen’ (rubato) in one place may be restituted in another.’⁴³ This kind of strict compensatory model seems to have been accepted by the majority of writers right up until the early decades of the twentieth century. Milsom draws attention to a number of descriptions of rubato from a vocal context that further this notion: the eminent singer and writer Pier Francesco Tosi advises that ‘the stealing of time is an honourable theft in one who sings better than others, providing he makes a restitution with ingenuity’⁴⁴ and Manuel de Garcia, a baritone who also wrote a celebrated treatise on singing, states in 1857 that ‘by *tempo rubato* is meant the momentary increase in value which is given to one or several sounds to the detriment of the rest, while the total length of the bar remains.’⁴⁵

⁴¹ Donnington, R., ‘Tempo rubato’ in Sadie, S. (ed.) (1980) *New Grove dictionary of music and musicians: Vol. 16*, p. 292.

⁴² Taylor, F. (1889) ‘Tempo Rubato’ in Grove, G. (ed.) *A dictionary of music and musicians: Vol. 4*, p. 85. Cited in Milsom, D. (2003) *Op. cit.*, p. 152.

⁴³ Hofmann, J. (1909) *Piano questions answered*, p. 100.

⁴⁴ P. F. Tosi, *Observations on the Florid Song* (English translation Galliard, London, 1743) as cited in Milsom, D. (2003) *Op. cit.*, p. 152.

⁴⁵ Garcia, M. de (1840/1947) *Traité complet de l’art du chant* (2 vols). Revised and translated by Paschke, D. V. as *A complete treatise on the art of singing*, p. 50.

The practical application of such theories of compensation has been investigated in detail by Sarah Martin in 'The case of compensating rubato', in which she analyses recorded evidence in light of theoretical instructions relating to compensation, in order to demonstrate how these ideas are manifested in performances. She cites a number of passages from Tobias Matthay's *Musical interpretation*, dating from 1913, and offers the following explanation of his compensatory definitions of 'leaning' and 'push-on' types of rubato:

The distinction he makes is between 'leaning rubato', in which a note or notes are emphasised by a *ritardando* which is then compensated for by a corresponding *accelerando*, and 'push-on' rubato, in which the reverse occurs and an *accelerando* is compensated for by a corresponding *ritardando*.

Matthay comments that the two types are often combined within a phrase ('compound' rubato), but that the 'leaning' type is more common than the 'push-on' variety.⁴⁶

Elsewhere, Matthay discusses compensating rubato occurring at different levels simultaneously; for instance, over the course of phrase as well as during shorter note figurations. The following comment regarding Mendelssohn's playing from Joachim and Moser's *Violinschule* again suggests that they advocated rubato use albeit with another clear cautionary undertone, this time regarding compensation:

For Mendelssohn, who so perfectly understood the elastic management of time as a subtle means of expression, always liked to see the uniform *tempo* of a movement preserved as a whole.⁴⁷

The pianist Josef Hoffman appears to have advocated strict adherence to the rule of compensation, as highlighted in the following recommendation dating from 1920:

The physical principle is balance. What you shorten of time in one phrase or part of a phrase you must add at the first opportunity to another in order that the time 'stolen' (rubato) in one place may be restituted in another. The aesthetic law demands that the total time-value of a music piece shall not be affected by any rubato, hence, the rubato can only have sway within the limits

⁴⁶ Martin, S. (2002) 'The case of compensating rubato', p. 101.

⁴⁷ Joachim, J and Moser, A. (1902-5) *Violinschule: Vol. 3*, p. 228.

of such time as would be consumed if the piece were played in the strictest time.⁴⁸

However, there are myriad accounts that suggest that the exact proportions of give and take do not always have to be quite so exact. The definition offered by *Stainer and Barret's Dictionary of Musical Terms* in 1898, which describes rubato as 'robbed or stolen time. Time occasionally slackened or hastened for the purposes of expression,' implies that compensation is far from an exact science.⁴⁹ Paderewski similarly states that rubato consists of 'a more or less important slackening or quickening of the time or rate of movement'.⁵⁰ Although a general notion of balance is common in theoretical writings concerning rubato from around the turn of the century, accounts such as Hoffman's that advocate strict adherence to the rule of compensation appear far less frequently. Whilst the definition given in the first edition of *Grove* was simply reprinted in the second edition (1904-10), by the time of the third edition (1927-8) a markedly more liberal approach is apparent:

The rule has been given and repeated indiscriminately that the "robbed" time must be "paid back" within the bar. That is absurd, because the bar line is a notational, not a musical, matter. But there is no necessity to pay back even within the phrase: it is the metaphor that is wrong. Rubato is the free element in time, and the more it recognizes the norm the freer it is. The law which it has to recognize is the course of the music as a whole; not a bar but a page, not a page but a movement. If it does not do this it becomes spasmodic and unmeaning, like correspondence which is too much underlined.⁵¹

As in the case of 'elasticity', inconsistent understanding of the 'stealing' metaphor appears to have led to conflicting recommendations. Whilst a number of writers recommend that stolen time should – or indeed must – be repaid, others, perhaps of a less ethical persuasion, are not so exacting in this regard. The kind of 'loose' terminology used by Stainer and Barret and Paderewski is typical of the more-relaxed

⁴⁸ Hofmann, J. (1920) *Piano playing with piano questions answered*, p. 100.

⁴⁹ Stainer, J. (ed.) (1898) *Stainer and Barrett's Dictionary of Musical Terms*, revised edition, p. 439.

⁵⁰ Paderewski, I. (1909) 'Paderewski on tempo rubato', in Finck, H. *Success in music and how it is won*, p. 459.

⁵¹ Fox Strangways, A. (1928) 'Tempo rubato' in Grove, G. (ed.) *A dictionary of music and musicians*, third edition: Vol. 4, p. 465.

theoretical approach to rubato that seems to have become the norm around the beginning of the twentieth century, replacing the strict definitions of compensating rubato that came before.

Aspects of musical expression are notoriously difficult to elucidate using words alone, hence the importance of the audio-visual elements in this study, and such difficulties often leave written accounts pertaining to playing style open to varying interpretation. The famed violin pedagogue Leopold Auer explains that 'phrasing, like other more aesthetic branches of the art of violin playing, is one of those things for which a detailed scheme of instruction cannot well be laid down. It is almost impossible to make specific suggestions for phrasing. It can be demonstrated, violin in hand, but not described.'⁵² Here Auer draws attention to an important issue relating to pedagogical writings, in that materials such as method books and performing treatises were rarely designed to be standalone instruction manuals, rather they were part of a musician's overall conservatoire education. The most fundamental part of this education was, of course, instrumental lessons, in which these written concepts could be far more easily explained and demonstrated by teachers. Lawson and Stowell tell us that 'many sources tend therefore to be vague rather than specific, doubtless reflecting the importance of the master-pupil relationship, in which technical secrets could be divulged for financial gain.'⁵³

It is therefore arguable that such writings are not to be taken literally, but should instead be put into context as instructional rather than descriptive texts. Cook explains that the aim of such pedagogical writings is 'to modify what performers do; it is not a description, but a prescription. And in this sense it is comparable to old-fashioned grammar books, which prescribed 'correct' usage, rather than to the abstract grammars of structural linguistics.'⁵⁴ Jennifer Tong furthers Cook's analogy, discussing the 'grammarisation' of rubato in method books, whereby abstract

⁵² Auer, L. (1921) *Violin playing as I teach it*, p. 77.

⁵³ Lawson C. and Stowell, R. (1999) *The historical performance of music: an introduction*, p. 24.

⁵⁴ Cook, N. (1999) 'Analysing performance and performing analysis', in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 251.

rhetorical devices, including compensating rubato, are mistaken for literal descriptions of musical practice. Tong argues that the traditional categories of rubato with their respective 'rules' should not be disregarded as invalid, rather considered as an abstraction designed to 'shape' a performer's approach to music.⁵⁵ The strict compensatory model can therefore be seen as a kind of ideal which, although seldom manifested in performance in a literal sense, may have influenced performers towards a more balanced approach to rubato.

1.2.3 *Rhythmic alteration*

A number of the aforementioned descriptions of rubato – particularly those pertaining to compensation – refer to the device in terms of small-scale rhythmic flexibility rather than larger-scale *accelerandi* and *rallentando*, suggesting that the device should be applied to individual bars or small-scale note figurations rather than entire phrases. Many dictionary definitions from around the turn of the century reflect this idea; in 1908 Dunstan describes 'taking a portion of time from one note and giving it to another for the sake of expression',⁵⁶ and in 1917 Greenish states that rubato 'indicates that the music is not to be performed in strict time, certain notes being given more, others less, than their absolute value.'⁵⁷ Dunstan's definition certainly implies an adherence to the wider theory of compensation, albeit in terms of individual rhythmic units; Greenish, however, is less specific in his language and it is not altogether clear if the end product of the rubato will maintain the general tempo. Definitions such as these do not necessarily prohibit larger-scale *accelerando-rallentando* shaping; omitting this kind of rubato from their definitions may simply be because it was such a common practice as to be taken for granted, in the same way that a constant *vibrato* is rarely commented upon in the context modern string playing.

⁵⁵ Tong, J. (1994) 'Rubato and Metaphor: Some Preliminary Thoughts', p. 5. Cited in Martin, S. (1996) *Op. cit.* p. 14.

⁵⁶ Dunstan, R. (1908) *A cyclopaedic dictionary of music*, p. 347.

⁵⁷ Greenish, A. (1917) *Dictionary of musical terms*, p.77. Cited in Philip, R. (1992) *Op. cit.*, p. 41.

Philip cites a number of performers who advocate rhythmic flexibility, including the pianist Josef Lhevinne, who uses language akin to Mahler's when explaining that 'rhythm should not be thought of as something dead. It is live, vital, elastic.'⁵⁸ The violinist Achille Rivarde similarly writes:

Rhythm is elasticity of movement. In physical life when the arteries harden and lose their suppleness, old age sets in and the decrease of vitality begins, and in music the analogy holds good. When the natural rhythmic ebb and flow, the elastic give-and-take of movement is resisted, the performance is characterised by a certain lifelessness and affects the listener as being spiritless. This elasticity of movement, this rhythm should be felt in every bar.⁵⁹

Such poetic descriptions as 'rhythmic ebb and flow' and 'elasticity of movement' do not, however, offer the musicologist any positive instruction as to what actually happens to the rhythm during a rubato passage; as is often the case when studying accounts of performing practice from a given period in history, writers generally assume in their readership some inherent understanding of the prevailing style of the time.

In contrast to these somewhat ambiguous descriptions, Riemann was the first to develop a detailed theory of 'agogics': the use of small modifications of rhythm for the purposes of expressive performance. In his 1884 work *Dynamik und Agogik* he coins the now familiar term 'agogic accent' to describe a note that is lengthened for the purpose of accentuation, without necessarily increasing its volume. There is evidence of this practice dating as far back as the sixteenth century, with Hudson citing comparable effects from the likes of Giulio Caccini and Girolamo Frescobaldi, but it was not until Riemann in the late-nineteenth century that an overall theory was established.⁶⁰ As Philip explains, many of his contemporaries advocate this kind of rubato well into the early decades of the twentieth century, albeit using different terminology. J. Alfred Johnstone, for example, who deplores 'the modern tempo

⁵⁸ Lhevinne, J. (1924) *Basic principles in pianoforte playing*, p. 45, as cited in Philip, R. (1992) *Op. cit.*, p. 37.

⁵⁹ Rivarde, A. (1921) *The violin and its technique as a means to the interpretation of music*, p. 44.

⁶⁰ Hudson, R. (1994) *Op. cit.*, p. 26.

rubato of the ultra-romantic school, which plays havoc with both form and time', describes the use of agogics as 'quasi tempo rubato', which 'modern editors are coming to recognize as one of the important principles of expressive interpretation'.⁶¹

Riemann cites a large number of musical examples in *Dynamik und Agogik* that contain appropriate locations for agogic accents, including in particular 'notes which form centres of gravity' within a phrase and 'more especially, in suspensions, whereby the harmonic value is rendered clearer'. The volume also includes a number of his editions of well-known keyboard works, in which agogic accents are clearly marked with the symbol ^.⁶² Johnstone, as well as recommending Riemann's editions, cites his own example involving the opening bars of Mendelssohn's *Andante and Rondo Capriccioso*. Although these bars consist of regular quavers, he recommends varying their length so that those falling on a crotchet beat are lengthened, with the highest pitches being longest of all:

When the chords are struck, as they so often are, in exactly even time, and with exactly even accentuation, the effect produced is as unlike the real music intended as the monotonous outflow of a pianola or a barrel-organ is unlike the playing of an artist. The very life of this passage consists in a delicate give-and-take in the proportionate lengths of the notes; a variety of touch; and a constant rise and fall of tone.⁶³

This practice of lengthening certain notes is not confined to piano playing, however; according to Johnstone, Joachim 'produces wonderful effects' in his use of agogics⁶⁴, an opinion which is also corroborated by J. A. Fuller Maitland. The following passage describes a 'typical instance of this freedom', in reference to Joachim's interpretation of the aria *Erbarme dich* from Bach's *St. Matthew Passion*:

⁶¹ Johnstone, J. A. (1914) *Essentials in pianoforte playing and other musical studies*, p. 45. Cited in Philip, R. (1992) *Op. cit.*, p. 41.

⁶² Riemann, H. (1882) *Op. cit.*, p.226.

⁶³ Johnstone, J. A. (1914) *Essentials in pianoforte playing and other musical studies*, p. 45. Cited in Philip, R. (1992) *Op. cit.*, p. 41.

⁶⁴ Johnstone, J. A. (1914) *Op. cit.*, p. 45. Cited in Philip, R. (1992) *Op. cit.*, p. 41.

Technically the secret of this regulated or logical freedom may be said to be based on the principle of what is now sometimes called ‘agogic accent’, i.e. the kind of accent that consists, not of an actual stress or intensification of tone on the note, but of a slight lengthening-out of its time-value, at the beginning of the bar, and at points where a secondary accent may be required. All the greatest interpreters of the best music have been accustomed to lay this kind of accent on the first note of the bar, or of a phrase, as taste may suggest; but none have ever carried out the principle so far or with such fine results, as Joachim has done.⁶⁵

Philip also draws attention to a number of writers who draw a parallel between the use of agogic accents and declamation in speech; Henry T. Finck cites Busoni’s advice in 1909, recommending that ‘the bar-line is only for the eye. In playing, as reading a poem, the scanning must be subordinate to the declamation; you must *speak the piano*.’⁶⁶ It is unsurprising that comparisons between agogics and speech declamation are even more prevalent in examples from singing treatises; M. Stirling Mackinlay, who offers a compensatory definition of rubato in terms of ‘the lengthening of certain syllables being equalised by the shortening of others’, goes on to explain that ‘it is a style of singing principally useful for the interpretation of strong feelings, being governed by the accent which is given in ordinary speech.’⁶⁷ Gordon Heller advises his singing students to ‘look upon each phrase as a musical sentence’ and offers specific advice regarding the placement of agogic accents:

If groups of notes happen to occur, which have to be sung to one word, the student must be careful to make the first note slightly longer – though only very slightly – than the rest of the group. Should a triplet be written by the composer, care must be taken here to make the first note of the three a trifle longer than the rest, and thus give a musical rendering of it. To hurry the time in such a place would spoil the rhythm...⁶⁸

⁶⁵ Fuller Maitland, (1905) *Joseph Joachim*, pp. 29-30.

⁶⁶ Finck, H. (1909) *Success in music and how it is won*, p. 300. Cited in Philip, R. (1992) *Op. cit.*, p. 42.

⁶⁷ Sterling Mackinlay, M. (1910) *Op. cit.*, pp. 156-7. Cited in Philip, R. (1992) *Op. cit.*, p. 42.

⁶⁸ Heller, G. (1917) *The voice in song and speech*, p. 129. Cited in Philip, R. (1992) *Op. cit.*, p. 42.

This idea of the exact interpretation of a triplet ‘spoiling the rhythm’ is particularly interesting, as it strongly implies that written notation represents an incomplete picture of how a triplet should actually be performed. W. H. Breare gives more general advice to the singer, implying the need for agogic accents in order to make passages more interesting for the listener:

There is nothing more unattractive than the slavish observation of strict time:
To execute any passage with grace, it becomes necessary to make a distinction
between accented and unaccented notes.⁶⁹

Milsom furthers the importance of the vocal ideal with reference to Charles de Bériot’s 1858 treatise *Méthode de violon*, which was adopted as a teaching aid by the Paris Conservatoire. Bériot states that ‘we cannot repeat too often that the performer will not be perfect until he can reproduce the accents of song.’⁷⁰ Bériot sets out his own model for phrasing in his treatise, dealing with a number of specific subjects:

- Variety of intonation⁷¹
- Utterance of the bow⁷²
- Punctuation⁷³
- Syllabation⁷⁴

The metaphor of speech is clear in his use of terminology and this notion persists throughout his phrasing model, further serving to underline the link between vocal and instrumental practice. As Milsom explains, “‘Utterance of the bow’ unambiguously confirms the vocal idea through right-hand technique, the bow perhaps being the instrumental equivalent of the larynx.”⁷⁵

Auer appears somewhat cautionary in the following recommendations regarding rhythm and accent:

⁶⁹ Breare, W. H. (1904) *Vocalism: its structure and culture from an English standpoint*, p. 108. Cited in Philip, R. (1992) *Op. cit.*, p. 42.

⁷⁰ Bériot, C. de (1876) *Méthode de violon*, p. 219.

⁷¹ *Ibid.*, p. 210.

⁷² *Ibid.*, p. 219.

⁷³ *Ibid.*, p. 226.

⁷⁴ *Ibid.*, p. 231.

⁷⁵ Milsom, D. (2003) *Op. cit.*, p. 40.

Accent, on which I have already laid such stress, is really a rhythmic sensation. And rhythm and accent must be free, they must, in a certain measure, be instinctive and individual. A violinist without a sense of rhythm is no violinist, he is as helpless as a painter who is colour blind. Rhythm is a principle underlying life, and all the arts, not that of music alone. In violin playing, it must be translated into natural interpretation in accordance of the character of a piece. This rhythmic accent is as much of a necessity, in order to give the proper value to the details of musical phrasing, as in speech itself.⁷⁶

Whilst 'natural interpretation' implies something of a liberal attitude to notated rhythm, which also reflects Heller's description of triplets, he goes on to warn the reader that 'the slightest additional emphasis, the least extension of a rubata [sic], will often produce the most grotesque results.'⁷⁷ As with other disparaging remarks regarding rubato, it seems likely that Auer is adopting a cautionary tone in order to guard against his pupils' misuse of the device, rather than objecting to it categorically. Comparable comments in his treatise regarding other expressive 'abuses', such as those concerning *vibrato* and *portamento*, carry a similar animosity; when put into a late-nineteenth century context, one might assume that the former is most likely, particularly given the liberal attitude to rubato exhibited by many of his pupils.

Whilst the above descriptions of rhythmic alteration offer a clear perspective of some of the ways in which performers manipulated rhythm, there seem again to be conflicting attitudes concerning whether such expressive alterations should be compensated for exactly. Some idea is given as to appropriate general contexts for this kind of rubato, although specific instructions, such as those offered by Riemann and Johnstone in relation to agogic accents, are relatively scarce. Given this kind of small-scale rubato applies to short figurations or even individual notes, the potential scope for its use is clearly far greater than that of *accelerando-rallentando* shaping, which may explain why so few writers have even attempted to suggest specific musical contexts in which the device should be utilised.

⁷⁶ Auer, L. (1921) *Op. cit.*, pp. 150-1.

⁷⁷ *Ibid.*, p. 156.

1.2.4 *Independence of melody from accompaniment ('earlier' rubato)*

In the case of the 'later' rubato, as Hudson explains, flexibility of tempo is applied to the melodic line with the accompaniment following suit, thus keeping the overall musical texture intact;⁷⁸ however, this has not always been the case. The pianist Josef Hofmann was posed the following question by one of his students in 1909:

I find an explanation of *tempo rubato* which says that the hand which plays the melody may move with all possible freedom, while the accompanying hand must keep strict time. How can this be done?

Hofmann offers the following, somewhat non-committal response:

The explanation you found, while not absolutely wrong, is very misleading, for it can find application only in a very few isolated cases... *Tempo rubato* means a wavering, a vacillating of time values, and the question whether this is to extend over both hands or over only one must be decided by the player's good taste... I can see only very few cases to which you could apply such skill, and still less do I see the advantage thereof.⁷⁹

In spite of this comment's negative connotations, many writers prior to and during the nineteenth century advocate a style of rubato in which the accompaniment keeps strict time whilst the melodic line alone plays with flexible tempo, thus creating temporary dislocation between the two. Hudson refers to this kind of melodic rubato as the 'earlier' rubato.⁸⁰

This phenomenon was not confined solely to piano playing, however, and Philip presents the following evidence which suggests this type of rubato may well have stemmed from vocal practice. Adolph Christiani, writing in the 1880s, uses the analogy of opera singing when instructing pianists to keep strict time in the left hand during rubato passages:

⁷⁸ Hudson, R. (1994) *Op. cit.*, p. 1.

⁷⁹ Hofmann, J. (1920) *Piano playing with piano questions answered*, p. 100.

⁸⁰ Hudson, R. (1994) *Op. cit.*, p. 1.

Now it may be said that this is impossible. But such is, by no means, the case. Listen, in Italian opera, to a first-class singer, and notice how steadily the orchestral accompaniment proceeds, while the soloist retards and accelerates, at almost every moment.⁸¹

Christiani offers the following compensatory description of rubato later on in the treatise, which recognises both the *accelerando-rallentando* and melodic types as appropriate in the context of Chopin's music, although he makes his preference for melodic rubato clear:

That capricious and disorderly mode of performance by which some notes are protracted beyond their proper duration and others curtailed, without, however, changing the aggregate duration of each measure, is a rubato. This mode, which is, in fact, the real rubato, as it is usually understood, will receive particular notice. It is the rubato of Chopin; very beautiful and artistic when in its proper place and limitation, but very ugly and pernicious when out of place, or exaggerated. It may be executed in two ways:

- (1) both hands in sympathy with each other, *i.e.* both hands playing with rubato.
- (2) or the two hands not in sympathy, *i.e.* the accompanying hand keeping strict time while the other hand alone is playing rubato.

The latter way is the more beautiful of the two, and is the truly artistic rubato.⁸²

Milsom similarly cites a number of passages from the early-nineteenth century that appear to be clearly advocating melodic rubato. Writing in 1832, the violinist Louis Spohr describes the '*tempo rubato* of the Soloist, during which the accompaniment must continue its steady, measured course',⁸³ and Garcia more clearly states:

⁸¹ Christiani, A. F. (1886) *The principles of expression in pianoforte playing*, p. 300. Cited in Philip, R. (1992) *Op. cit.*, p. 43.

⁸² Christiani, A. F. (1886) *Op. cit.*, pp. 805-6. Cited in Hudson, R. (1994) *Op. cit.*, pp. 324-325.

⁸³ Spohr, L. (1832) *Violinschule*, p. 234.

To make the tempo rubato perceptible in singing, the accents and time of an accompaniment should be strictly maintained: upon this monotonous ground, all alterations introduced by a singer will stand out in relief, and change the character of certain phrases...'⁸⁴

As with strict rules regarding compensation, descriptions of this earlier style of flexibility appear less frequently in writings that date from the early-twentieth century, although a number of writers continue to recommend that the accompaniment must maintain strict time during rubato passages. In 1897, Franklin Taylor writes:

Such variations are too delicate and subtle to be expressed in the notation, and the effect must depend for its success entirely on the discretion of the player, but it should be observed that any independent accompaniment to a rubato phrase must always be kept in strict time, and it is, therefore, quite possible that no note of a rubato melody will fall exactly with its corresponding note in the accompaniment, except, perhaps, the first note in each bar.⁸⁵

Frederick Nieks also recommends the following in 1913:

Where there is an accompaniment rhythmically distinct from the melody, the former should be in strict time, whilst the melody, within certain limits, may proceed on her course with the greatest freedom.⁸⁶

Interestingly, these two later examples advocate dislocation when the accompaniment is 'independent', or 'rhythmically distinct', which could be seen to imply that in a simpler homophonic texture the accompaniment should follow the rubato of the melodic line, in the manner of the 'modern rubato'.

Philip highlights a comment made in 1913 by the pianist Max Pauer, which describes his bewildered reaction on hearing melodic dislocation in a recording of his own piano playing for the first time:

Was I, after years of public playing, actually making mistakes that I would be the first to condemn in any one of my own pupils? I could hardly believe my

⁸⁴ Garcia, M. de (1840/1847) *Traité complet de l'art du chant*, p. 51.

⁸⁵ Taylor, F. (1887) *Technique and expression in pianoforte playing*, p. 73.

⁸⁶ Nieks, R. (1913) 'Tempo rubato from the aesthetic point of view', *Monthly Musical Record*, 43, p. 29. Cited in Philip, R. (1992) *Op. cit.*, p. 43.

ears, and yet the unrelenting machine showed that in some places I had failed to play both hands exactly together...⁸⁷

This surprising lack of awareness about his own playing suggests that Pauer was utilising melodic rubato unconsciously, purely as an instinctive response to the music. Applying this technique in piano playing requires a certain amount of skill, given that both hands are required to operate independently, so he would arguably remember any training to this effect that took place during his formative years; it is therefore more likely that this stylistic trait was acquired from other players of the period. Pauer's comments also draw attention to the importance of recordings as a feedback mechanism for performers, allowing them to scrutinise their own playing in a manner that was impossible before the era of recorded sound. This newfound possibility for self-reflection, described by Mark Katz as the 'phonograph effect' has arguably proved profoundly influential in its own right and is an issue that will be returned to later in this study.⁸⁸

Among violinists at the turn of the twentieth century, Eugene Ysaÿe was particularly admired for his use of rubato. Carl Flesch, the renowned violin pedagogue and theorist, described him as 'a master of the imaginative rubato,'⁸⁹ and Henry Wood remembers his 'marvellous singing quality and perfect rubato... if he borrowed he faithfully paid back within four bars.'⁹⁰ Wood's comment strongly implies that Ysaÿe adhered to the general theory of compensating rubato, and his long-time accompanist Emile Jacques-Dalcroze makes it clear that Ysaÿe employed flexibility of tempo independently from his accompaniment, as highlighted in the following account that describes a rehearsal of Beethoven's 'Kreutzer' Sonata:

In rubato melodic passages, he instructed me not to follow him meticulously in the *accelerandos* or *ritardandos*, if my part consisted of no more than a simple accompaniment. "It is I alone", he would say, "who can let himself follow the emotion suggested by the melody: you accompany me in strict time, because

⁸⁷ Cooke, J. (1913) *Great pianists on piano playing*, pp. 201-2.

⁸⁸ Katz, M. (2004) *Capturing sound*, pp. 1-7.

⁸⁹ Flesch, C. (1957) *Memoirs*, p. 79.

⁹⁰ Wood, H. (1938) *My life of music*, p. 128.

an accompaniment should always be in time. You represent order and your duty is to counter-balance my fantasy. Do not worry, we shall always find each other, because when I accelerate for a few notes I afterwards re-establish the equilibrium by slowing down the following notes, or by pausing for a moment on one of them.” In the train he would try to make up violin passages based on the dynamic accents... of the wheels, and to execute “rubato” passages, returning to the first beat each time one passed in front of a telegraph pole.⁹¹

This account of ‘practising’ melodic rubato is particularly interesting when compared to Pauer’s unconscious use of the device, thus highlighting the fact that stylistic traits can be methodically learned as well as indirectly acquired.

The ‘earlier’ melodic style of rubato can be seen as adhering to the theory of compensation in a true sense; as the accompaniment does not deviate at all from a regular tempo, any degree of flexibility applied to the melody must therefore be compensated for exactly so as to reunite with the accompaniment at the end of a given rubato passage. Indeed, it is quite possible that many writers who advocate strict compensation are referring specifically to this kind of melodic rubato, which may explain in part why such definitions became less common from the beginning of the twentieth century onwards, as the ‘earlier’ rubato grew less fashionable.

1.3 Joseph Joachim

It is also particularly relevant, from a performance practice standpoint, to investigate what Brahms himself may have expected or indeed advocated in terms of flexibility of tempo and rubato in a performance of his own work. By doing this it will be possible to see to what extent – and if indeed at all – violinists from the ‘golden age of violin playing’ reflect Brahms’ musical aesthetic in terms of rubato.

⁹¹ Dalcroze, J. (1930) ‘Quelques notes et souvenirs’, *La Revue Musicale*, 188, pp. 30-1. Cited in Milsom, D. (2003) *Op. cit.*, p. 157.

At the time of Brahms' death in 1897 the era of recorded sound was still very much in its infancy; his own recorded legacy is unfortunately limited to a single wax cylinder recording of him at the piano, performing an excerpt from the first of his *Hungarian Dances* in 1889.⁹² Sadly, the minute's worth of surviving audio is of such poor quality that precious little insight can be gleaned into his own playing style but this tantalisingly brief aural record does serve to remind us just how recent Brahms' lifetime was to our modern era of recorded sound. As has been highlighted by the myriad examples of written evidence concerning rubato, stylistic change is a gradual process; given that just thirty years elapsed between Brahms' death in 1897 and the making of the first recording considered in this study, it is therefore a reasonable hypothesis that many of the stylistic traits familiar to Brahms would have lingered on into the early-twentieth century and, as a result, should be evident to at least some extent in the recordings utilised herein.

Unfortunately, as with other areas of stylistic expression, there is very little written evidence from Brahms himself pertaining to his attitudes towards either tempo or rubato. He is said to have only provided metronome marks when 'good friends have talked me into putting them there, for I myself have never believed that my blood and a mechanical instrument go well together',⁹³ which could be interpreted in one of two ways; either Brahms felt that the metronome was inadequate in representing the flexibility inherent in his music or, rather than objecting to the metronome for stylistic reasons, he could simply have been something of a technophobe. Philip usefully pieces together some of this fragmentary evidence :

What is certain is that Brahms distrusted the metronome, and took a liberal view of other musicians' interpretations of his works. He was against any idea of a single "right" tempo for a movement... Fanny Davies's description of Brahms's "expansive elasticity" suggest an approach for which any metronome marking would only supply an approximate starting point. This preference for

⁹² This short performance is included on the CD accompanying Musgrave, M. and Sherman, B. (eds.) (2003) *Performing Brahms: early evidence of performance style*.

⁹³ Henschel, G. (1907) *Personal recollections of Johannes Brahms*, p. 78. Cited in Sherman, B. D. (2003) 'Metronome marks, timings, and other period evidence regarding tempo in Brahms', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 99.

flexibility of tempo is underlined by the approving way in which the word “freedom” is used by Brahms in describing other musicians.⁹⁴

In spite of his apparent animosity towards the mechanical device, a total of forty-four metronome marks survive from eight of Brahms’ works, originating either from the composer’s own hand or from others after hearing either rehearsals or premieres of the works in question. As Bernard Sherman explains, in the case of the Violin Concerto Op. 77, we have a full set of metronome marks, most probably from the dedicatee Joachim, which can be found in a 1910 printing of the piano reduction of the first edition of the concerto and also in the solo violin part which accompanies Moffat’s English translation of Joachim and Andreas Moser’s *Violinschule*. Interestingly, the markings cited for the outer movements in the German edition are rather faster, although the marking for the slow movement utilised in this study is the same in both editions.⁹⁵

Allegro non troppo 3/4	crotchet = etwa 120 (126 in German ed.)
Adagio 2/4	quaver = etwa 72
Allegro giocoso, ma non troppo vivace 2/4	crotchet = etwa 96 (126 in German ed.)
Coda	crotchet = 120 (132 in German ed.)

Table 1.1 Joachim’s metronome markings in the Brahms Violin Concerto, Op. 77.

Although there are precious few clues from Brahms own writings as to his attitudes towards rubato, it is possible to gain some important insight into his general outlook on interpretation through the writings of some of his contemporaries; most notably those of the Joachim. During the 1850s Brahms became acquainted with the Hungarian violinist who, towards the end of the nineteenth century, became widely recognised as the chief exponent of the German school of violin playing and one of the finest performers of his generation. Brahms and Joachim worked together closely on a

⁹⁴ Philip, R. (2003) ‘Brahms’s musical world: balancing the evidence’, in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, pp. 354-355.

⁹⁵ Sherman, B. D. (2003) *Op. cit.*, p. 101.

number of the former's compositions, including his *Hungarian Dances* and violin concerto. Joachim suggested a number of revisions to the concerto, at Brahms' request, which consisted mainly of alterations to figuration within the solo violin part, as well as some subtle changes of orchestration.⁹⁶ A substantial quantity of surviving correspondence between the two musicians demonstrates the great personal respect, both professional and personal, that they held for each other, particularly given that Brahms felt somewhat under-qualified to write for the violin.⁹⁷ Brahms greatly admired Joachim's integrity in always holding the composer's intentions in the highest regard, rather than concentrating on wooing audiences with his own virtuosity. Rühlmann says this of Joachim in 1865:

An energetic representative of a high artistic ideal is Joseph Joachim (1831), who with iron consistency, unmoved by the streams of external virtuosity, concentrates only on the realisation of his true artistic principles... He precisely modifies his style of performance to suit the historical period in which the work he is to perform belongs... Joachim seems to lend a sense of consecration to all these works, so that one can decisively say: he plays the composer. Such an artist must prove fruitful for his own times and for the future for he embodies the means to higher artistic ends.⁹⁸

Eduard Hanslick corroborates this view two years later:

Of all things, though, the quiet grandeur which pervades his renderings remains Joachim's most characteristic feature, and the severity and purity of style which

⁹⁶ These alterations can be seen clearly in the facsimile of Brahms' original manuscript. Fascinatingly for the musicologist, different colours of pencil and ink have been used at different stages of the work's revision.

⁹⁷ A number of letters between Brahms and Joachim are included in Gal, H. (ed.) (1965) *The musician's world: letters of the great composers*, pp. 301-322. Brahms' attitude towards his own compositions is consistently one of humbleness and he is frequently apologetic about the quality of work sent to Joachim for perusal, particularly with regards to his violin writing. In a letter concerning his Violin Concerto dated 21 January 1879, Brahms writes: 'I wish I could go through it with a violinist less good than you, for I am afraid that you are not sufficiently blunt and severe! To impress me, you would have to make a great many suggestions and alterations!' (p. 310).

⁹⁸ Rühlmann, J. (1865) 'Die Kunst des Violinspiels', *Allgemeine musikalische Zeitung*, 3, p. 701. Cited in Milsom, D. (2003) *Op. cit.*, p. 20.

strives to hide the charms of virtuosity rather than accentuate them. It is not possible to bring forward greatness more unobtrusively.⁹⁹

This praise for Joachim's 'unobtrusiveness' and the idea of him 'playing the composer' paint a rather purist and stylistically conservative picture of Joachim as an interpreter; a picture that is corroborated by Joachim and Moser's *Violinschule*, which contains much advice concerning the realisation of music along with various exercises, etudes and some of Joachim's own editions of famous violin works including Brahms' concerto. Given that this study is focused on performances of a late-Romantic work by violinists who were active in the inter-war period of the twentieth century, Joachim represents something of a stylistic 'missing link', in that he worked closely with Brahms whilst continuing to perform right up until his death in 1907, just twenty years prior to the earliest recording considered in this study. A number of passages from Joachim and Moser's *Violinschule* have already been cited, which suggest that Joachim clearly advocated the use of rubato, albeit within the bounds of taste. The following instruction furthers this notion:

It is not enough to observe the letter; the spirit of the work of art must be brought to life if its performance is to make any impression. If the player is what may be called an innately musical person, his inclination towards a certain freedom will impel him to throw off the constraint which the continuo expresses. He will, as it were, try to soften its rigidity, and assist the life, which is latent in the melodies, to blossom forth. In other words, wherever the course of the cantilena seems urgently to demand it, the performer will so far slacken the rhythmic structure of the bar that he will no longer feel the continuo as a burdensome fetter, but rather as 'freedom's hallowed guard'.¹⁰⁰

As suggested by Rühlmann and Hanslick, the musical text itself is placed at the heart of their interpretive model and these ideas of 'the spirit of the work [being] brought to life' and 'the life, which is latent in the melodies' all suggest that the performer's role should involve bringing the composer's ideas to life and realising the expression that is

⁹⁹ Cited in Moser, A. (1908-10) *Joseph Joachim, ein Lebensbild: Vol. 2*, p. 292. Cited in Brown, C. (2003) 'Joachim's violin playing', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 49.

¹⁰⁰ Joachim, J and Moser, A. (1902-5) *Violinschule: Vol. 3*, p. 16.

already inherent to the music, rather than stamping one's own individuality on a piece. This idea strongly reflects Elgar's request to leave his music 'alone to say what it had to say in its own way', yet in a manner that is 'elastic' and 'mystic'. Joachim's somewhat contradictory idea of freedom not as caprice but conformity echoes the attitude of many musicians discussed earlier; that rubato or flexibility of tempo is to be encouraged, so long as it is employed in a manner to their own liking.

It is fairly safe to assume that Brahms was consistently pleased with Joachim's approach to performing his music, otherwise he would not have worked so closely with him through much of his career; however, in common with other performing treatises of the time, there are frustratingly few details in Joachim and Moser's *Violinschule* relating to specific instances of where rubato is appropriate or how, in their opinion, the effect is to be tastefully executed. In the sections regarding *vibrato* and bowing, many specific musical examples are cited, detailing what is considered both tasteful usage and what is to be avoided at all costs. However, the section regarding tempo and tempo fluctuation is a lot more vague, dealing more with general aesthetic concepts somewhat philosophically, rather than offering any specific instructions.

Although the written evidence suggests that Joachim had a relatively conservative approach to individual interpretation, in terms of him 'playing the composer', it would be grossly unfair to label him merely as a translator of the composer's notation in Stravinsky's sense of the word; the status that he held as one of the greatest violinists of the nineteenth century – an era when individuality of interpretation was prized – would most certainly have not been earned without his own musical personality playing a substantial role in his performances. Both Brahms and Joachim accepted that a great performer should not be bound entirely by the notation in front of them and the scarcity of specific expressive markings in Brahms' scores in itself suggests a fairly relaxed attitude to the interpretation of his music, particularly when held in contrast to the highly-detailed notation employed by the likes of Elgar and Mahler. One criticism that Joachim and Moser have of the famed Belgian violinist Henri Vieuxtemps was

that 'like so many of the Franco-Belgian school in recent times – he adhered too strictly to the lifeless printed notes when playing the classics, unable to read between the lines.'¹⁰¹

However, as Milsom explains, by the end of the nineteenth century Joachim's German school that had been prominent for so long was fast becoming eclipsed by the newer and more-fashionable Franco-Belgian school, spearheaded by the violinists Eugene Ysaÿe and Pablo de Sarasate.¹⁰² Unsurprisingly, a certain amount of animosity existed between these schools and they stood clearly largely apart on stylistic grounds, as highlighted by the following passage taken from Joachim and Andreas Moser's *Violinschule*:

The crux of the matter is, that without detriment to their musical proficiency otherwise, these French and Belgian virtuosi, although possessed of an astonishing technique of the left hand, have not only entirely forgotten that natural method of singing and phrasing which originated in the bel canto of the old Italians... but they even continue to repudiate it. Their bowing and tone production merely aim at the sensuous in sound.¹⁰³

It is not at all clear from these and other writings how these two schools differed with regards to rubato, although one might expect that the same conservative/liberal dichotomy that is apparent in their attitudes to *vibrato* and *portamento* would also extend to issues of musical timing.

Joachim, like Brahms, is one of the earliest nineteenth-century performers to be captured on record, which affords us a far clearer picture of how he made use of rubato in his performances. Milsom examines a number of his 1903 recordings,

¹⁰¹ Moser, A. (1908-10) *Joseph Joachim, ein Lebensbild: Vol. 2*, p. 292. Cited in Brown, C. (2003) 'Joachim's violin playing', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 49.

¹⁰² Milsom, D. (2003) *Op. cit.*, p. 26.

¹⁰³ Joachim, J and Moser, A. (1902-5) *Violinschule: Vol. 3*, p. 32.

making the following observations regarding Joachim's manipulation of musical time in a performance of his own *Romanze*:

It can be seen here that Joachim over-dots rhythms, creates 'smoothings', and even a form of 'scotch-snap' in bar 67. The degree of difference aptly displays an attitude of flexibility to the written text that seems all the more extreme by virtue of the fact that Joachim rarely performs his own notated rhythms. Equal-length notes – particularly in shorter values – are seldom played equally... it does suggest powerfully that the philosophy behind rhythmic interpretation was quite different to today – notes being the *guidelines* for a performer's caprice, and not a blueprint for reproduction.¹⁰⁴

These comments clearly suggest that he employed something of a liberal attitude to rhythm, particularly given that he exhibits such flexibility in performances of his own works. Although descriptions such as 'quiet grandeur' and 'playing the composer' might suggest a somewhat conservative attitude to the manipulation of musical time, the insight afforded by his recorded legacy appears to tell a markedly different story, once again highlighting the importance of contextualising written evidence.

1.4 Summary

Although a somewhat ambiguous picture of rubato is created from written sources in the late-nineteenth and early-twentieth centuries, it is nonetheless clear that the device was considered a fundamental element of expressive performance. An increase in condemnations of the devices 'misuse' that appear in literature as the period progressed suggests that rubato came to be used far more frequently and, by some, with an increasing lack of musical justification, although the shortage of detailed validation in such comments makes it difficult to gauge just how much this was the case. For instance, it is impossible to tell whether some of the attacks on the 'tempo rubato conductors' were levelled at the likes of Mahler and Elgar, who clearly utilised a large amount of flexibility in their performances, or whether these criticisms

¹⁰⁴ Milsom, D. (2003), *Op. cit.*, p. 176.

concerned lesser-known and perhaps less capable musicians, who may have used the device to a comparable extent but far less discriminately. Writings by the principal violin theorists of the nineteenth century are surprisingly reticent in discussing the practical application of rubato but, in common with other literature, there seems to be a general acceptance of the device's importance, albeit accompanied by cautionary advice with relation to its practical application.

Taste is a key factor here, both in terms of the manner in which rubato is used and the way these performances are received by listeners. All composers from this period advocate flexibility of tempo in some form or another, but the extent to which it is tolerated varies a great deal. Stravinsky is something of an exception in demanding that performers must only employ flexibility of tempo as indicated by him in score, although the surviving recordings of his conducting reveal that he was not entirely omnipotent when it came to controlling tempo himself. At the other extreme we have the more liberal approaches of composers such as Elgar and Mahler, who appear more enthusiastic about the expressive potential of rubato, although even these less-prescriptive composers exhibit a tendency to criticise misuse of the device when it comes to others' interpretations of their own works.

A number of written statements allude to the importance of rubato in delineating musical structure. At a macroscopic level, *accelerandi* and *rallentandi* play a vital role for the performer as a kind of 'musical punctuation' in delineating the formal structure of a movement: for example by slowing down at the end of a section before returning to tempo at the beginning of the next, thus making the transition clearer for the listener.¹⁰⁵ On an intermediate level, flexibility of tempo can be used to outline the structure of an individual phrase and, on a microcosmic level, individual notes or short figurations can be shaped within phrases by using small-scale rubato or rhythmic alteration. Although writers frequently differentiate between flexibility of tempo, which occurs on a larger scale, and rubato on a smaller scale, these can be seen

¹⁰⁵ This idea of slowing for the purposes of structural delineation will be explored in more detail in chapter 3.

essentially as manifestations of the same expressive device, albeit employed across different structural levels of the music. It stands to reason that 'incorrect' use of rubato can therefore be a disruptive influence, hence the multitude of criticism to this effect.

It is also relevant to consider the differences in interest between groups of writers. Whilst pedagogues would have most likely been cautious in their approach to stylistic issues in order to avoid their students using expressive devices inappropriately, as Milsom argues, lexicographers seem to have been far more concerned with preserving the historical meaning of the terms defined.¹⁰⁶ In any case, both groups can be seen to have a vested interest in the way in which their written accounts are interpreted, therefore neither is likely to have simply described the reality of the time. In the case of performers, the language they use is often poetic and perhaps deliberately florid, thus furthering the romantic ideal of the 'artiste' for their readership, which unfortunately makes the extrapolation of meaningful details pertaining to their use of rubato somewhat difficult. Furthermore, aspects of musical expression are notoriously tricky to describe on paper, which partially explains why few violin treatises from the 1920s onwards have attempted to tackle such issues. Auer argues that 'it is almost impossible to make specific instructions for phrasing. It can be demonstrated, violin in hand, but not described.'¹⁰⁷ It is apparent, however, that performers tend to be more positive in their outlook than other writers; although there are occasionally instances of one performer criticising another's misuse of rubato, such disparagement is generally left to composers and theorist. As is to be expected with a stylistic matter that is so heavily governed by issues of taste, there is a clear schism amongst writers between those who favour more and those who prefer less. Although many of these accounts could be labelled as being either 'pro-' or 'anti-rubato', they are all essentially making the same point; if used 'correctly', rubato can be a vital tool in delineating the structure of a piece and, as the nineteenth century progressed, increasingly vital to the communication of the increasingly emotional Romantic style of composition.

¹⁰⁶ Milsom, D. (2003) *Op. cit.*, p. 160.

¹⁰⁷ Auer, L. (1921) *Op. cit.*, p. 73.

Many writers – in particular performers and composers – evoke organic and naturalist analogies in discussing rubato, using vocabulary such as ‘ebb and flow’ or ‘living and breathing’ in order to justify its importance as a means of communication. This resonates with the parallels drawn between vocal and instrumental practice, particularly in terms of agogics and speech declamation, in that extra-musical factors are connected to flexibility of tempo as a means of communicating notated scores more vitally to the listener. The marked change in compositional style over the course of the nineteenth century, from the Classical through to the late-Romantic, resulted in performers having to adapt their mode of delivery in order to communicate the increasingly expressive emotional content of the music ‘naturally’ for the listener; rubato was clearly considered a crucial device to this end.

It is almost certain that there was a breakdown of adherence to the convention of compensating rubato towards the end of the nineteenth century, as evidenced by the growing criticism of players who did not strictly abide by the rule. Although not entirely abandoned in the early-twentieth century, the rule of compensation appears to have gradually been superseded in theoretical writings by more general notions of balance, thus reflecting performers’ changing use of rubato. Smaller-scale rhythmic adjustments, such as agogic accents, seem to have become increasingly popular around the turn of the century and are recommended by many writers as a less intrusive alternative to larger-scale tempo fluctuations, due to the fact that the performer is able to highlight particularly expressive points in the music without the need to disturb the underlying pulse. Melodic rubato is an interesting case, in that it represents an almost completely alien concept to the modern listener, and would most probably be mistaken for inadvertently untidy ensemble if it were to appear in a contemporary performance. However, it forms part of a long tradition of dislocation between melody and accompaniment and was clearly considered to be an important stylistic trait during the nineteenth century. It continued to endure to some extent in the early decades of the twentieth century in the playing of world-renowned

performers such as Ysaÿe, in spite of him being considered something of a modernist at the time he rose to fame.

Although a multitude of different attitudes towards rubato can be found in writings of this period, the care with which the subject is treated in reference works, together with the passionate conviction inherent in many more-subjective statements, pay testament to the importance of rubato in the performance of late-Romantic music.

Chapter 2. Working with Recordings

This chapter outlines the specialised methodology that has been developed for the purpose of this comparative study, in order to extract and subsequently analyse empirical timing information from recordings. This study utilises two main types of analysis – close-listening and computational analysis – in order to examine thirty recordings of Brahms' Violin Concerto, Op. 77; these two contrasting methods have their individual merits and are arguably most useful when used in tandem. Some background to each method is given, along with a discussion of issues that can arise when working with different kinds of recorded media. Given that recordings are just as much in need of 'historically and technically grounded interpretation' as written evidence,¹ before examining any specific methodologies the opening section of this chapter represents an attempt to contextualise the recordings used in this study.

2.1 Recordings and Associated Issues

The majority of analytical work contained in this study is focused on recorded music: a vast resource unavailable to researchers involved in earlier periods of performing history, which provides unique and valuable evidence pertaining to performing style from the late-nineteenth century onwards. Although seeing a performer live in concert is perhaps the most obvious way to glean information about that individual's manner of delivery, this presents clear problems when studying performers from the first half of the twentieth century, due to the fact that the majority of these artists are now deceased. The concert hall setting also presents a number of complications for the performance analyst; a live performance is a fleeting, mercurial experience, both for performer and audience, which can be analysed just the once as it unfolds in real-time. Recordings, on the other hand, allow for repeated listening, which makes them far more suitable as the subject for detailed analysis than live performances in that

¹ Cook, N. (2009) 'Changing the musical object', p. 776.

they overcome the limitations of an analyst's memory. The captured sound, whether on a recorded medium such as LP or CD or in a purely digital form, can also be manipulated in a variety of ways, such as by slowing it down or altering its volume in order to hear fine details more easily, or employing some kind of computational analysis. Although recordings undoubtedly provide a valuable resource, a number of specific issues need to be addressed in order to adequately contextualise this type of evidence.

The first problem to consider is the validity of the recordings themselves; if one is looking to extrapolate useful information regarding a particular performer's playing style then it is clearly important that the recordings are accurately representative of the artist in question. Not all performers respond particularly well to the recording studio environment, either due to unfamiliarity, the time-dependent pressure to perform at one's best or the lack of an audience to create a suitable atmosphere for performance. Robert Philip explains that 'a limitation of recording, then, is that some musicians need the occasion, the circumstances, the audience, and the interaction with other musicians in concert, to communicate their best.'² In the late-nineteenth and early-twentieth centuries a lack of familiarity with the methods of acoustical recording, along with the general discomfort of the early recording studio, are problems that frequently affected players' capacity to perform; numerous examples of which are discussed in the chapter 'Making Recordings' in Timothy Day's *A Century of Recorded Music*.³ Cook likewise evokes the case of a recording by Alessandro Moreschi, suggesting that, due to apparent nervousness, less than ideal performing conditions and Moreschi's unfamiliarity with the process of acoustic recording, the resulting aural record 'may not have been wholly representative of how Moreschi sang.'⁴ Bowen casts similar doubt over certain early recordings: 'not simply sceptical of the accuracy of early recordings made under less than ideal conditions, scholars also

² Philip, R. (2004) *Performing music in the age of recording*, p. 242.

³ Day, T. (2000) *A century of recorded music*, pp. 1-57.

⁴ Cook, N. (2009) *Op. cit.*, p. 775.

doubt the possibility of reflecting backwards in time based upon these low fidelity traces of late-career performances.⁵

The issue of age is particularly pertinent to early violin recordings, many of which feature eminent performers who were somewhat advanced in years.⁶ The aforementioned violinist Joseph Joachim made a handful of recordings in 1903 when he was 72 years of age and it is hard to know by how much, and indeed if at all, his playing had deteriorated since the height of his career.⁷ However, this issue is not solely confined to early recordings. For instance, many of the later recordings by Yehudi Menuhin are plagued by poor intonation and deteriorating bow control; contemporary listeners would not know what he sounded like in his heyday were it not for the existence of his earlier recorded output. Furthermore, live performances are arguably just as likely to be susceptible to extenuating circumstances that might affect their validity as studio recordings; factors such as tiredness, poor health or performing anxiety can all result in musicians not performing to the best of their ability. Indeed, if one were to labour the point then such factors could conceivably affect a listener or analyst as well. Peter Johnson casts doubt over the validity of accounts that blame recording conditions for sub-standard performances, arguing that ‘there are reminiscences by musicians who speak of the discomforts of the early recording studios and the limitations of the three-minute “take”, but these usually date from many years after the event and so do not override the evidence of the recordings themselves.’⁸ Indeed, concerns regarding the unfamiliarity of the recording studio only really apply to the earliest years of recording, as by the 1920s studio recording had generally been accepted as an integral part of a performing musician’s working life.

⁵ Bowen, J. (1996) ‘Performance practice versus performance analysis: why should performers study performance?’, p. 17.

⁶ Many of the earliest violin recordings dating from around the turn of the twentieth century feature renowned nineteenth-century performers, such as Joseph Joachim, Pablo de Sarasate and Eugène Ysaÿe, who were very much in their twilight years at the time of recording.

⁷ These recordings have been reissued as Joachim, J. (1903) *Complete recordings*. Opal: OPALCD 9851.

⁸ Johnson, P. (2002) ‘The legacy of recordings’, in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 201.

Although old-age or discomfort can conceivably effect technical elements of playing such as tone or intonation, it is harder to say what influence such conditions would have on an artist's playing style, particularly with regards to timing. Whereas other expressive devices such as *portamento* and *vibrato* are technically-dependent on a certain degree of suppleness in the left hand, which can deteriorate in later years, *rubato* is primarily concerned with when notes are played, not how they are played, which makes the expressive device arguably more likely to remain under the performer's control. In spite of this relatively small and somewhat unavoidable potential for the inaccurate representation of performers in certain cases, if recordings were considered legitimate at the time of their creation then we should arguably accept them as such today, both technically and stylistically. Martin asserts that 'making excuses for past recordings and even dismissing them or reconstituting them according to modern tastes tells us not so much about the alleged inadequacy of the recording as a reluctance to acknowledge the sometimes dramatic changes in performance style and cultural conceptions of performance that have occurred over the last century.'⁹

Recordings also present the researcher with a number of practical problems; they never fully capture the sound quality of a live performance, even with modern technological advancements in sound recording and reproduction, and early acoustical recordings are a far cry from the modern high-fidelity digital techniques used today. Recording techniques play a vital part in any sound recording, as Johnson explains: 'each recording is a synthesis of composition, performance and particular recording methods'. In order to place the recordings examined in this study into a wider context and to better understand the relationship between a performer and their recorded legacies, it is useful to briefly examine the history of sound recording in the twentieth century, along with discussion as to how the associated issues relate both to the performers involved and contemporary analysts.¹⁰

⁹ Martin, S. (1996) *Analysing musical recordings: an empirical approach*, p. 7.

¹⁰ Johnson, P. (2002) *Op. cit.*, p. 209.

2.1.1 *A brief history of sound recording and related issues*

The technology of sound recording has come a long way from its roots in the primitive mechanical devices used by scientists to capture and study sound waves in the 1850s; today's listener is able to access a wealth of high-fidelity digital recordings on demand at home, in the cinema and even on the move thanks to recent innovations in portable media devices and streaming services. As with the development of any new technology, the refinement of sound recording has been gradual, with certain innovations providing occasional leaps forward. Since 1900, there have been five principal recording media: acoustically recorded shellac disc (1900-25); electrically recorded shellac disc (1925-54); monophonic vinyl LP (1950 to c. 1960); stereophonic vinyl LP (1958 to c. 1985); and modern digital recording, starting with the CD in the early 1980s.¹¹

By the end of the nineteenth century, the vast majority of recordings were made using a phonograph, the first of which was constructed by Thomas Edison in 1877 as a by-product of his experiments in recording and transmitting telegraph messages via telephone.¹² This device functioned by using a large metal horn to capture the live sound before transferring it onto a wax cylinder so that it could then be played back. Many similar devices were constructed by other scientists around this time, giving rise to a multitude of patent disputes and extensive debate regarding whose machine came first and whose was of most merit. One of the scientists caught up in this innovative melee was Emile Berliner, who was the first to develop the lateral disc as a recording medium and began his production of gramophone records in 1894; although Berliner's discs did not offer any improvements in terms of sonic fidelity, the discs were far more portable than the unwieldy and fragile cylinders. The chief reason for the record's early success, however, was the possibility for mass production: a metal 'master' could be created from the original wax disc recording which was then used to

¹¹ Johnson, P. (2002) *Op. cit.*, p. 199.

¹² For a more detailed account of the early development of the phonograph see 'Chapter 1: Making Recordings', in Day, T. (2000) *Op. cit.*, pp. 1-57.

press copies onto hard rubber or shellac. Whereas a maximum of around 125 cylinders could be created from a performance before the original wax cylinder wore out, the metal master disc allowed for duplication *ad infinitum*, resulting in the gramophone record becoming the first publically-available recording medium and a model for all other analogue discs used in sound recording throughout the twentieth century.

Life in the early recording studio was not altogether straightforward, either for performer or recording engineer. The recording horn itself had a number of limitations: the frequency range that the horn could register was fairly narrow (at around 168–2000 Hz) and it was far less dynamically sensitive than a modern microphone.¹³ Wax cylinders and acoustically-produced gramophone records suffered from a large amount of hiss and other extraneous noise during playback, to such an extent in some early recordings that the performance can barely be heard.¹⁴ The finished product sounded quite different to the live performance in the studio and, in the same way as early television presenters had to wear lurid make-up in order to appear normal on screen, performers frequently had to resort to unusual tactics in order to assure that a relatively straightforward effect was achieved when the recording was played back. For instance, due to problems relating to the horn's dynamic sensitivity, performers would often have to move closer to the horn during louder passages and then move further away to achieve a quieter dynamic, as Day explains: 'any dynamic contrasts were difficult to achieve; if a woodwind instrument had a solo he had to stand up and lean forward or even scurry round and make obeisance to the horn at a distance of a couple of inches.'¹⁵ White lines were sometimes drawn on the floor in order to guide performers to this end and many musicians complained at being shoved back and forth by recording engineers while they were performing. Certain instruments fared better than others when recorded by

¹³ Johnson, P. (2002) *Op. cit.*, pp. 198-199.

¹⁴ One particularly extreme case of this problem is the only surviving recording of Brahms playing the piano, which was made on 2 December 1889. His performance of bars 13-72 of his first Hungarian Dance is only just discernible amidst the large amount of background noise. This can be found on the CD accompanying Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*.

¹⁵ Day, T. (2000) *Op. cit.*, p. 12.

the horn, which often resulted in balance problems, particularly when attempting to record large groups of musicians such as dance bands or orchestras, and reductions or changes in instrumentation were often necessary. For instance, the rhythm section of dance bands, which traditionally comprised piano, stringed bass, guitar and drum kit, was particularly problematic; all but the drum kit were almost completely lost in the musical texture so banjos began to be favoured for the added percussiveness of their sound. The drum kit presented the opposite problem with its loudness frequently causing distortion to the recording, resulting in it often being abandoned completely in favour of a washboard.¹⁶

A particularly ingenious solution to the problems presented by recording the violin was patented by the German designer Johannes Matthias Augustus Stroh in 1899. Named after its inventor, the Stroh violin or 'violinophone' used a metal resonator and horns to amplify the violin's sound rather than the usual wooden sound box, making it much louder than a traditional instrument. The use of metal horns also made the sound more directional which, coupled with the aforementioned increase in volume, made the instrument extremely useful in the acoustic recording studio.¹⁷ Although the tone of the instrument was far less complex and subtle than a good-quality standard violin, finer details of timbre were lost in the recording process and the increased projection of the Stroh meant that just a few of these instruments could sound like an entire string section when recorded. This made the studio experience far more comfortable for the players – particularly in early recordings of orchestral repertoire where space was at a premium. A number of sources also testify that many eminent soloists used Stroh violins for recording in the early decades of the twentieth century, although only a few admitted using them when questioned, most probably because using anything less than a fine Italian instrument was, and still is, deemed beneath many players. A newspaper advertisement for a new record in December 1904 reassured listeners that '[Jan] Kubelik has made two records with his own Stradavarius, *not a Stroh*.'¹⁸ In his

¹⁶ For more on the way jazz band instrumentation was influenced by the recording process see 'Chapter 3: Capturing Jazz', in Katz, M. (2004) *Capturing sound*, pp. 72-84.

¹⁷ For more on the Stroh Violin see Rabinovici, A. (2005) 'Augustus Stroh's phonographic violin. A journey: Victorian London, Australia, Transylvania'.

¹⁸ Batten, J. (1956) *Joe Batten's book*, p. 35. Cited in Day, T. (2000) *Op. cit.*, p. 11.

Memoirs, the renowned violinist and pedagogue Carl Flesch confesses quite candidly to using a Stroh violin in his recordings, although other players may not have been quite so frank when it came to their own use of this novel instrument.¹⁹ Whilst the discs produced using these acoustic techniques sound noisy and somewhat unrefined by modern standards, these older recordings are arguably more-representative of the performances they captured, given that editing was impossible and music had to be recorded in a single costly take. As Johnson explains, 'broadly speaking, the earlier the recording, the more distortion there will be from the recording process, but the less intentional manipulation by the producer.'²⁰

One of the most important leaps forward in recording technology came in 1925 with the dawn of electrical recording, when horns were replaced by microphones and loudspeakers, thus facilitating huge improvements both in terms of sound quality and the studio experience in general. The first microphones were capable of capturing an increased frequency range of approximately 100 to 5000Hz, the upper limit of which increased to around 8000Hz by the mid-1930s; the improved bass frequencies gave much more weight and richness to the sound and the treble frequencies became far more detailed and defined. An electronically-amplified microphone was capable of picking up sound from a much greater distance than the acoustic recording horn, which further helped to alleviate the cramped conditions that caused so many problems in the early recording studio.

When listening to an early recording on any media other than the original cylinder or disc, for example on an 'historic' CD reissue, it is important to remember that at some point the recording must have been transferred from the original. Transferring early recordings is a complicated process with a large number of different variables to consider, which affect the end result to the extent that two transfers of the same

¹⁹ Flesch, C. (1957) *Memoirs*, p. 289.

²⁰ Johnson, P. (2002) *Op. cit.*, p. 199.

source material can sound completely different.²¹ The first obstacle to the transfer technician is deciding what playback speed to use; by the end of the first decade of the twentieth century the standard playback speed for gramophone records was 78rpm (revolutions per minute) but in the early years of recording the playback speed was not always consistent between different manufacturers. The pitch of a record is determined by the speed at which it is played back, as anyone will know who has accidentally played an LP at the incorrect speed, therefore, as Milsom explains, selecting the wrong speed for a recording can completely alter its key.²² Transfer engineer Mark Obert-Thorn describes this particular problem in reference to one of the earliest performances examined in this study:

As collectors of original shellac discs have long been aware, '78s' were very often recorded at something other than 78 rpm. Rarely, however, does one find such extremes of playback speed within a single set as are present on the 1928 Szigeti recording of the Brahms Violin Concerto, whose first side is correctly pitched at 77.0 rpm and whose second plays at 74.2, with the rest falling somewhere in between.²³

Another problem is presented by anti-noise filters, which make it possible to reduce background hiss; insufficient filtering makes for unpleasant listening to modern ears whereas too much can result in important frequencies of the original sound being lost. In the early days of 'historical' reissues of recordings in the 1980s, transfer technicians were under particular pressure to make the recordings palatable to the modern listener, which frequently resulted in overly-aggressive filtering and equalisation that completely distorted the original sound. Today's transfer technicians generally take a much more restrained approach, concentrating their efforts on preserving the original recording as much as possible, even if this necessitates a certain amount of remaining background noise.

²¹ Roger Beardsley has produced a guide to good practice in the transfer process, along with some examples of less than successful attempts. This can be found on the CHARM website: Beardsley, R. (2005) *Making transfers from 78rpm sources – a practical guide*. Available at http://www.charm.rhul.ac.uk/history/p20_4_4.html (Accessed: 14 July 2011).

²² Milsom, D. (2003) *Theory and practice in late nineteenth-century violin performance: an examination of style in performance, 1850-1900*, p. 150.

²³ Obert-Thorn, M. (2002) Sleeve notes to *Brahms/Mendelssohn: Violin Concertos*. Naxos Historical: 8.110948, p. 4.

In addition to these issues, analysts are frequently faced with the more-practical difficulty of obtaining the recordings themselves, particularly when they only exist in their original medium and no subsequent reissue is available. In the case of solo violin music, James Creighton's reference work *Discopedia of the Violin* provides an invaluable resource to the researcher by cataloguing almost every recording of solo violin music made prior to the book's initial publication in 1973.²⁴ Although not entirely comprehensive, this book makes it far easier for researchers into a particular piece or performer to know exactly what materials are available – or indeed potentially available – rather than having to search through old record catalogues, which are themselves often difficult to obtain.

So how do these media-related issues affect the analysis of recordings? In terms of the variability in sound quality between different recorded media, measuring musical timing presents far fewer problems than other expressive parameters; for example, in the case of measuring dynamic intensity, one has to take into account the reduced dynamic range of older recordings, along with other issues relating to background noise. Any kind of investigation into instrumental timbre in early recordings would be particularly tenuous, as the sound quality of instruments was severely limited by the recording technology, as exemplified by some players' preference for the Stroh violin over a fine traditional instrument. Due to the fact that musical timing essentially involves the two variables of pitch and time, all one needs is for the recorded sound to be clear enough to be able to measure the beginning of each note; although some of the earliest recordings that feature in this study, dating from the late 1920s, are somewhat 'rough' compared with the crystal-clarity of modern digital recordings, the pitch content remains clear enough to be able to measure note onsets with a high degree of confidence. Further to issues of sound quality, the length of a particular recording medium has the potential to affect performance speeds; Milsom argues that it is more than likely that the four-minute length of a disc's 'side' – proving a limiting factor prior to the 1950s innovation of editable tape – is more than likely to have

²⁴ Creighton, J. (1974) *Discopaedia of the violin*. An updated second edition was published in 1997.

affected performers' choice of tempo.²⁵ However, in terms of the issue regarding variable playback speed, although this might affect the validity of studies concerning large-scale measurements of tempo within a piece, rubato is essentially concerned with relative changes of speed from one note or beat to the next; therefore, the extent and manner in which rubato is employed will not change, even if the playback speed does.

The problems associated with the study of recordings – in particular early ones – are far outweighed by the potential insight they offer into historical performing styles. As demonstrated by David Milsom's study of Joachim's recordings, just a few minutes of listening can tell us far more about how a performer sounded than a lifetime of studying written accounts. Having highlighted some of the key issues relating to recordings and the performances they have captured, attention will now be turned to common approaches for the gleaning of useful stylistic information.

2.1.2 *Recordings in musicology*

The most obvious method of obtaining stylistic information from recordings – and the one traditionally favoured by musicologists – is simply to listen to them and attempt to discern any stylistic features by ear. This approach has been successfully undertaken in numerous studies, including Milsom's *Theory and Practice in Late Nineteenth-Century Violin Performance*²⁶ and Philip's *Early Recordings and Musical Style*²⁷, both of which examine numerous early twentieth-century recordings in detail, extrapolating and categorising key stylistic traits that offer valuable insights in areas such as tempo, rubato, *vibrato* and *portamento*. This kind of subjective approach is extremely valuable; after all, recordings are designed to be listened to and the communicative relationship between performer and listener is essentially very similar to that in the concert hall in spite of their physical and temporal dislocation. However,

²⁵ Milsom, D. (2003) *Op. cit.*, p. 150.

²⁶ Milsom, D. (2003) *Op. cit.*.

²⁷ Philip, R. (1992) *Early recordings and musical style*.

human perception can prove something of a limiting factor, particularly with regards to timing. Bruno Repp explains that 'musicological studies of performance practice have usually relied on qualitative observations... Qualitative observations are particularly unreliable in the case of timing because the variations are subtle and often not heard as tempo modulations; what is usually perceived is the expressive effect rather than its physical cause.'²⁸ Much of this unreliability can be overcome by the use of empirical measurement, however, as will be discussed in the following section.

2.2 Empirical Performance Data

In addition to predominantly qualitative studies, such as those by Milsom and Philip, in recent years there have been an increasing number of musicological studies undertaken that examine recordings quantitatively, using various methods to extrapolate and subsequently analyse empirical data. The inclusion of empirical data can be valuable in musicological studies of performance by 'stabilising a fleeting phenomenon' and thus overcoming the limitations of both an analyst's memory and their descriptive ability.²⁹ The inclusion of quantitative evidence also lends a greater degree of objectivity to any observations that are made that would not be possible through descriptive language alone. Indeed, a certain amount of empiricism is present in Milsom and Philip's work, for example in the former's tempo graphs and tabulations of *portamento* usage and the latter's approximated metronome markings and tempo comparisons; however, in both cases the vast majority of analysis takes the form of largely-subjective commentary.

As with the analysis of historical recordings, the inclusion of empirical analysis also represents something of a radical departure from the traditional performance practice model, as empirical data is more-traditionally associated with the area of music

²⁸ Repp, B. (1997) 'Expressive timing in a Debussy prelude: a comparison of student and expert pianists', p. 257.

²⁹ Clarke, E. (1995), 'A semiotic perspective on expression and meaning in performance', *Society for Music Theory Annual Meeting*.

psychology. As Bowen states, musicologists are traditionally 'suspicious of scientific-looking data'. This is a key reason why musicology has been relatively slow to adopt empirical methodologies, as the process has necessarily involved the breaking down of institutional boundaries between performance practice, analysis and music psychology.³⁰ Studies in music psychology primarily aim to elucidate and subsequently apply general principles; Clarke explains that 'as also in psychology more generally, the aim is virtually without exception to explore general processes that have a variety of manifestations and applications'³¹ and Neil Todd similarly states that empirical analysis in music psychology focuses on 'the principled explanation of performance data.'³² Studies such as Seashore's *Psychology of Music* and Todd's *A Model of Expressive Timing in Tonal Music* are fairly typical of this kind of research in that they formulate formal models for musical timing and subsequently apply them to empirical data gleaned from various recorded performances;³³ according to Cook, this type of approach moves 'from analysis to performance'.³⁴ Clarke and Todd's comments highlight a fundamental difference between the approaches taken by music psychology and musicology – a difference of general versus specific; whereas music psychology focuses on formal models and how individual examples relate to them, musicology generally focuses its attentions on specific examples before formulating any more-generalised conclusions. In her PhD thesis, *Analysing Recordings: An Empirical Approach*, Martin refers to these contrasting approaches as 'top-down' and 'bottom-up'; thus reflecting their differing points of departure. 'Top-down' approaches, such as those by Seashore and Todd, have a number of benefits; they are particularly useful in the comparison of large numbers of performances, which is a key reason why this approach was generally favoured up until the 1990s. However, such model-oriented approaches can prove restrictive in the study of performing style as they do not leave much room for musicological creativity by way of less-formalised descriptive ideas, as Martin explains:

³⁰ Bowen, J. (1999) 'Finding the music in musicology: performance history and musical works', in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 432.

³¹ Clarke, E. (1989) 'Mind the gap: formal structures and psychological processes in music', p. 4.

³² Todd, N. (2009) 'A computational model of rubato', p. 71.

³³ Seashore, C. (1938) *Psychology of music* and Todd, N. (1985) 'A model of expressive timing in tonal music'.

³⁴ Cook, N. (1999) 'Analysing performance and performing analysis', in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 239.

For a musicologist, however, exclusive reliance on such formalised explanations is restrictive because it disallows more creative and imaginative explanations of performance. Whilst such creative explanations may not withstand rigorous formal testing or be sufficiently thoroughgoing to allow for the formulation of an empirical model, they embody a recognition that music cannot wholly be explained in terms of formal theories, and that part of musical understanding involves more speculative and 'fuzzy' ideas.³⁵

The 'creative and imaginative' explanations of performance offered by musicology are arguably far easier for a performer to relate to than the complex mathematical formal models of music psychology; indeed, the whole concept of generalised formal models of performance is one that many performers would find totally alien, particularly as such models tend to ignore the element of individual choice in interpretation that performers hold so dear. As Taruskin states, 'it is the academic mind, not the performer's, that is trained to generalize and seek normative procedures.'³⁶ However, Repp argues that in order to determine what is individual in a particular performance, one must first ascertain what is normal: 'In order to gain a better understanding of the unique artistry of great musicians, it is necessary to determine first the typical expressive patterns that may serve as an aesthetic norm for musicians and their audience.'³⁷ This argument stands to reason; however, the problem with the vast majority of 'top-down' approaches is a tendency either to disregard or explain away any data that does not fit the general model. Cook cautions that 'if you begin, as people usually do, by analysing the score, and then see how far you can map the score-based analysis onto performance features, you are in effect filtering the performance data, discarding data that do not fit – or, at least, do not bear upon – the score-based analysis.'³⁸ Individual performances therefore tend to be judged by how well they conform to the model in question, rather than considered on their own terms if they differ from it; this creates something of a bias towards the theorist rather than the performer – unsurprisingly it is usually the author who comes up with the theory – as performances tend to be judged not on their own merits, but to what extent they

³⁵ Martin, S. (1996) *Op. cit.*, p. 22.

³⁶ Taruskin, R. (1995) *Op. cit.*, p. 97.

³⁷ Repp, B. (1997) *Op. cit.*, p. 258.

³⁸ Cook, N. (2009) *Op. cit.*, p. 780.

adhere to a particular formal model. In Cook's words, this 'locates the intersection of analysis and performance firmly on the theorist's turf.'³⁹ In order to most-usefully glean analytical information regarding interpretation, it makes sense to align one's approach to analysis with manner in which a performer approaches the act of interpretation. To this end, Cook proposes a more-musicological 'bottom-up' style of empirical analysis, which begins with considering a performance on its own terms and then working inductively towards analysis; this represents something of a direct reversal in the relationship between theory and practice compared with the 'top-down' approach. He recommends that both styles of approach are most usefully used in conjunction, and that a solely 'top-down' approach is 'not so much incorrect as incomplete and unbalanced'.⁴⁰ Indeed, some kind of middle ground is arguably necessary in order to be able to discuss idiosyncrasies within individual performances in detail whilst at the same time incorporating empirical evidence that lends itself more favourably to larger-scale comparison; this kind of balanced 'middle-ground' approach has been attempted in this comparative study.

2.2.1 Empirical data collection

The next problem to consider is how to extract empirical timing information from recorded evidence. A major problem with recordings from an empirical point of view is their initial impalpability, as Cook explains: 'whereas the score is tangible the sound is intangible: the data you can actually manipulate is highly reduced.'⁴¹ A variety of contrasting methods have been developed to obtain data from live performance, including a number of studies that have obtained performance data directly from specialised equipment such as Carl Seashore's use of the 'Iowa piano camera', dating from the 1930s, which produced numerical output data pertaining to musical timing and dynamic intensity.⁴² There have also been more-recent midi-based incarnations such as Henry Schaffer's grand piano interfaced with a mini-computer, which also

³⁹ Cook, N. (1999) *Op. cit.*, p. 239.

⁴⁰ Cook, N. (1995) 'Music minus one: rock, theory and performance', p. 40.

⁴¹ Cook, N. (2005) 'Towards the compleat musicologist', p. 3.

⁴² Seashore, C. (1938) *Psychology of music*. New York: Dover.

provides data directly from a live performance.⁴³ Studies such as these utilise bespoke, often expensive equipment to glean data from live performances; however, alternative, computational methods are necessary in order to extract this kind of data from recordings.

2.2.2 *Computational analysis*

A common problem, highlighted by Cook, that arises with both equipment-based and computational analysis is one of being 'swamped' with too much data.⁴⁴ For this reason, the majority of empirical studies of performance have concentrated their efforts on the area of musical timing, where the amount of data that can be extracted from a recording is fundamentally limited by the number of notes that the piece contains. Musical timing can also be examined at less-detailed, higher structural levels, such as from bar to bar or beat to beat, thus reducing the volume of data further. Although other elements of expression such as dynamic intensity and *vibrato* are all quantifiable using computational analysis, there is potentially far more information to deal with as just a single note can exhibit a theoretically-infinite amount of internal variation in terms of its volume and pitch. Many large-scale studies of timing have taken place in recent years, such as the Chopin Mazurkas project in association with CHARM, which compares a vast array of recordings by different artists in terms of their use of timing.⁴⁵

A variety of computational methods can be used to obtain empirical data for the analysis of tempo and rubato. Many studies, such as those by Nicholas Cook and Bethany Lowe, utilise a simple yet effective 'tapping' method, whereby the analyst

⁴³ For more on these methods, see Cook, N. (1987) 'Structure and performance timing in Bach's C major Prelude (WTC1): an empirical study', p. 258.

⁴⁴ Cook, N. (2009) *Op. cit.*, p. 787.

⁴⁵ The Centre for the History and Analysis of Recorded Music (CHARM) was established in 2004 by the Arts and Humanities Research Council with the aim of promoting the musicological study of recordings, drawing on a wide range of approaches ranging from computational analysis to business history. The Mazurkas project has its own website, which can be found at <http://www.mazurka.org.uk/> (Accessed 14 June 2013).

listens to the recording and taps along with the beats using the computer's keyboard.⁴⁶ A basic computer program, such as 'timing.exe', records the time between each key-stroke and converts the data to a small text file, which can then be imported to Excel or other software for manipulation.⁴⁷ The biggest problem with this otherwise quick and easy method is that of human error and, although the process can be repeated a number of times in order to calculate average values, its accuracy is still rather limited. If an analyst is consistently early or late with a particular note for instance, possibly due to issues relating to their perception of an excerpt, this error would conceivably go uncorrected by the averaging process. Furthermore, the tapping method is only really suited to measuring the onset time of each bar or beat; using this method to accurately measure onset times of individual notes is far more problematic, particularly in the case of quicker note figurations or when the general tempo is fast, as its accuracy is limited by how quickly the analyst can react to hearing the start of each note.

Computational analysis necessitates at least a basic working knowledge of computer software and the following section is designed to offer a brief overview of the 'Sonic Visualiser' program, which has played a fundamental part in both the analysis and visual representation of empirical data in this study.

2.2.3 *Sonic Visualiser*

All of the computer-based analysis in this study utilises the software Sonic Visualiser;⁴⁸ developed by Chris Cannam at the Centre for Digital Music at Queen Mary, University of London in collaboration with CHARM, this free software offers a powerful playback and visualisation environment that incorporates a wide variety of 'analyst-friendly'

⁴⁶ Lowe, B. L. (2012) 'Analysing performances of Sibelius's fifth symphony: the 'one movement or two' debate and the plurality of the music object' and Cook, N. (1999) *Op. cit.*

⁴⁷ The timing.exe program is available for download at <http://www.southampton.ac.uk/~musicbox/charm5.html> (Accessed 14 June 2013).

⁴⁸ Daniel Leech-Wilkinson and others have created a number of video tutorials and a step-by-step user guide of this specialist software at <http://www.sonicvisualiser.org> (Accessed 14 June 2013).

features, including variable-speed playback, looping, and the ability to generate tempo data which can be displayed as on-screen graphs or exported to a spreadsheet program such as Excel.⁴⁹ In order to analyse a recording using computer software it is first necessary to transfer it onto the computer's hard disk, which is easiest if the music is already in a digital format such as compact disc, as the music can be quickly 'ripped' using a program such as Windows Media Player. As with any form of media transfer, it is good practice to preserve the original sound as much as possible; all of the recordings analysed in this study have been converted to the wave file format (.wav), which means that no digital information is lost during transfer, whereas other computer audio formats such as .mp3 that utilise compression sacrifice sonic fidelity to some extent in order to maintain a smaller file size. If a particular recording is unavailable digitally, for example if it only exists in analogue form on record or cassette, it can be digitally converted using software such as Audacity.⁵⁰ One of the most useful visualisation tools in Sonic Visualiser is the spectrogram, which plays a particularly vital role in this study's measurement of timing.

2.2.4 Spectrographs

Spectrographs are used in a variety of different disciplines and the term broadly refers to any kind of visual representation of a given spectrum; in this case, the frequency content of recorded sound, whereby frequency is mapped vertically against time. Figure 2.1 is an example of a spectrograph created in Sonic Visualiser from a recording of violin and piano, centred on the point at which the violin enters after the piano introduction.⁵¹

⁴⁹ A variety of other software can carry out some or all of these practical functions, although other programs are generally geared towards sound editing rather than analysis.

⁵⁰ This transfer process comes with its own issues, however: see pp. 80-81.

⁵¹ Excerpt taken from the second movement of Beethoven, Sonata No. 9 in A major, Op. 47, 'Kreutzer', performed by Heifetz, J. and Moiseiwitsch, B. (Naxos, 8.110990, 1950).

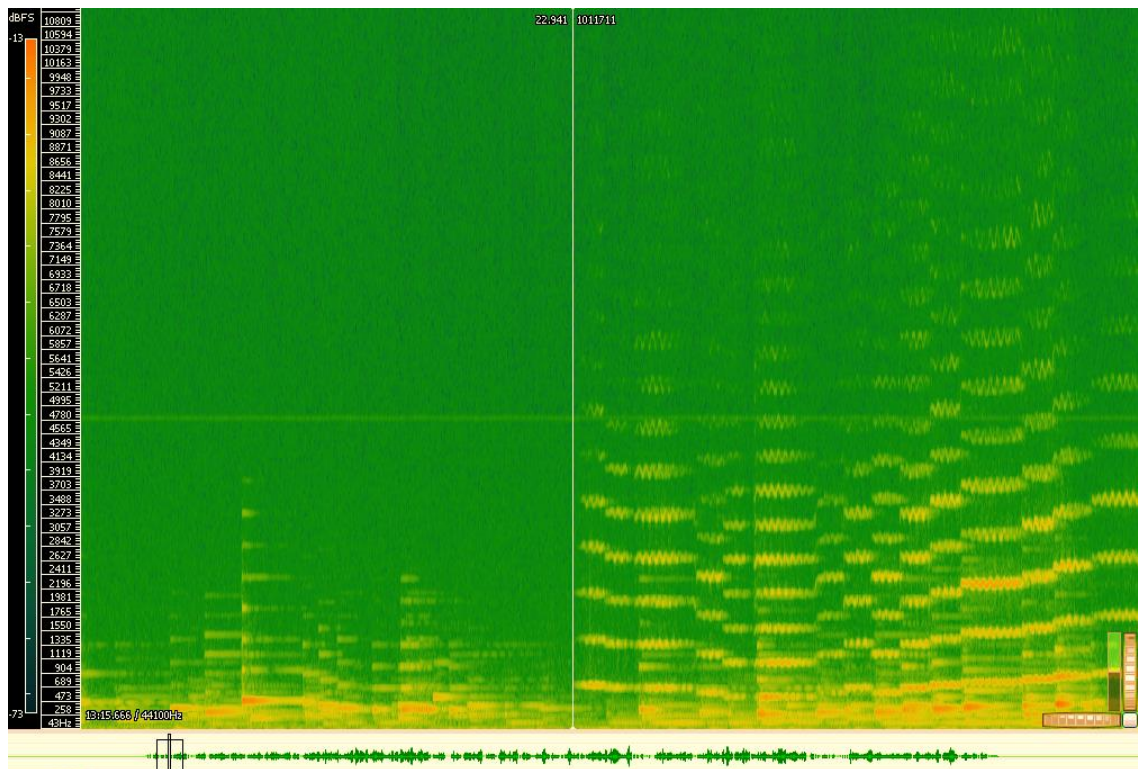


Figure 2.1 Spectrograph showing an excerpt from Beethoven's 'Kreutzer' Sonata.

The fundamental pitches – that is the sounding notes that the listener actually hears – are all clustered together at the very bottom of the screen and the 'reflections' of these patterns at increasingly higher intervals in the frequency spectrum represent higher-frequency resonances known as 'upper-partials'. The violin notes can be discerned from the piano's because the fluctuation in pitch as a result of vibrato produces wavy lines, whereas the piano notes are of a more-constant frequency and produce regular wedge shapes. The violin's method of sound production produces much more in the way of upper partials than the piano because the notes do not begin to decay immediately after their onset. Dynamic intensity is represented by colour, with the loudest frequencies appearing red, and black indicating an absence of sound altogether, as per the scale on the far-left of the screen. In the case of this particular spectrograph, which has been generated using a 1950 recording featuring Jascha Heifetz, the background is a dark green colour due to a small but nonetheless audible

amount of extraneous background noise resulting from the recording process; modern, digitally-made recordings appear far darker in areas between the sounding frequencies. Spectrographs provide detailed and accurate information pertaining to pitch, time and dynamic intensity – three of the most important variables involved in expressive performance – which makes them extremely useful for the purpose of analysis. Sonic Visualiser's spectrographic display is also 'interactive', in that one can easily take a measurement of these three variables at any given point on the screen, simply by hovering over it with the mouse pointer. In addition to the analysis of rubato, this also facilitates empirical measurement of other expressive devices such as *vibrato* and *portamento*.⁵²

One of Sonic Visualiser's most useful features is that it can augment the aforementioned tapping method with acute adjustment of the resulting values using a spectrograph, which allows for extremely-accurate correction of these note onset times, thus making it far more practical to measure individual notes. After the audio file is opened in Sonic Visualiser it is possible to roughly tap in the beats by ear while the piece plays; these values are subsequently displayed as a layer of 'time instants', whereby each beat or note onset is displayed visually as a vertical line that intersects the waveform. Once these approximate values have been entered, it is possible to superimpose them onto a spectrographic visualisation of the music and then manually drag each beat so as to coincide exactly with the onset of a particular note.⁵³ Figure 2.2 shows an example of a passage that has already been annotated and corrected in this way.

⁵² For instance, one can easily measure both speed and depth of *vibrato* or the average speed of a *portamento*. It is also useful in discerning what kind of slide is being used: an issue that will be explored further later on in this chapter.

⁵³ The 'tapping' method is not strictly necessary with Sonic Visualiser, as individual 'time instants' can be created by clicking with the mouse pointer; however, it does speed up the process overall, as well as helping the analyst to actively engage with the musical timing within a particular performance.

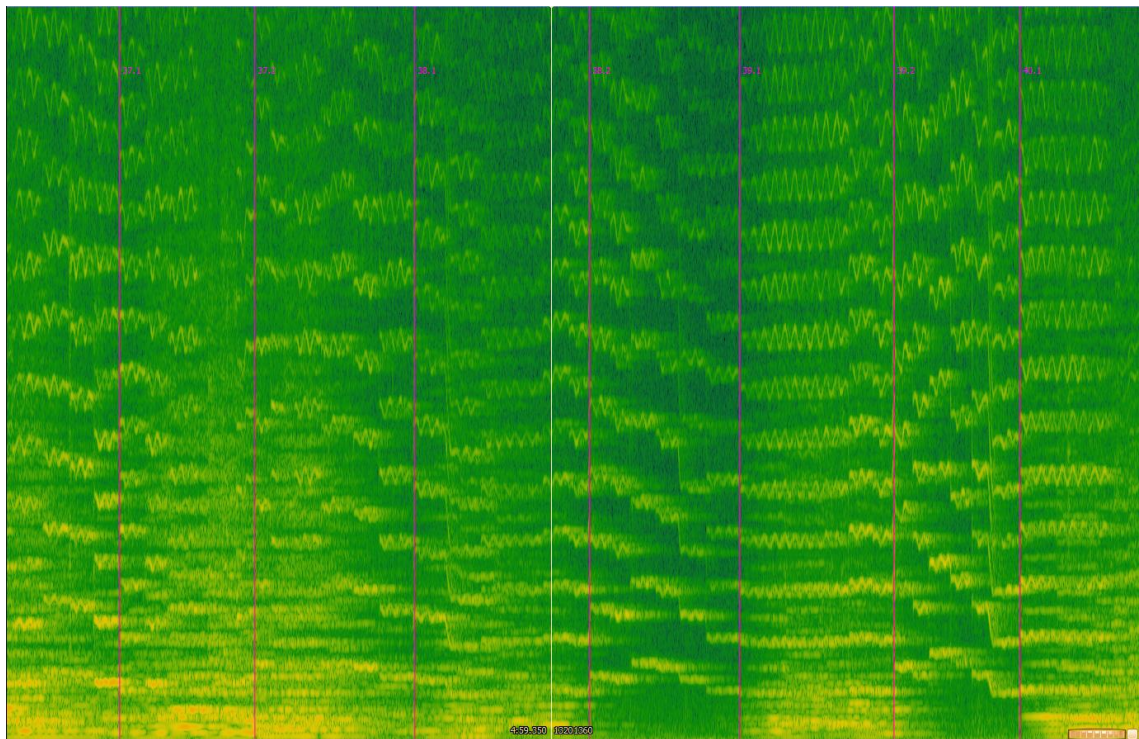


Figure 2.2 Spectrograph with added 'time instants'.

This technique works best in passages where the violin changes note at the start of every beat; however, this is not always the case and, depending on the piece of music in question, there may be syncopations, notes that are tied across beats, or rests that result in there being no note onset with which to measure the start of a beat. In this situation the analyst is left with a number of options, the first being to calculate an approximate value based on surrounding beats that do have measurable onset times. Although seemingly a logical solution, this process is more complicated than simply calculating the half-way point between the surrounding beats; if the unknown note onset is contained within the context of a passage that is either speeding up or slowing down, as is frequently the case, then it is necessary to calculate the rate of acceleration or deceleration at that particular point in order to come up with a useable estimate. The second option is to use a note onset from elsewhere in the musical texture, such as from a piano accompaniment or orchestral part; however, this is also less than ideal in that the primary aim of this analysis is to glean information about violinists' use of rubato, not that of a pianist or conductor. Moreover, as discussed in

the previous chapter, dislocation of melody and accompaniment remained a part of some performers' playing style in the early decades of the twentieth century, with the implication that measuring a note onset value from an accompanying instrument could potentially be misleading. The most straightforward solution, therefore, is to avoid the detailed analysis of passages where the violin does not consistently play notes at the start of every beat and, if any measurements are used that do not originate from the soloist, appropriate caution should be taken when subsequently interpreting the data.

To digress briefly, although not a central concept in this study, it is relevant to briefly consider the influence of other performers on the soloist's musical timing. In unaccompanied solo repertoire the player is left completely to their own devices, therefore any use of rubato will be entirely of their own choosing; however, if any other musicians are involved in a performance then they will most likely have some degree of influence on the soloist's musical timing, regardless of whether or not they are even aware of it. The extent to which other musicians might influence the solo player depends a great deal on the type of repertoire in question; in the majority of Romantic sonatas for violin and piano, for example, the two instruments are of comparable importance in the musical texture and the pianist's own style of delivery is more likely to influence that of the violinist. In music where the piano plays little more than an accompanying role, however, the violinist has far more license in terms of timing, safe in the knowledge that the pianist will – or at least should – follow them. In the case of orchestral repertoire such as concertos, the conductor obviously has a major influence on the overall tempo, particularly given that movements more often than not begin with some kind of orchestral exposition, although nuances of phrasing and rubato in the solo violin part will almost certainly be envisaged by the soloist rather than the conductor. Bearing all of this in mind, the excerpts selected for the most detailed analysis in this comparative study primarily consist of passages where any other instruments involved play a subservient, accompanying role to the violinist;

as one might expect from a concerto movement, there are only a couple of brief passages in Brahms' *Adagio* where the solo violin plays an accompanying role.⁵⁴

Once onset times have been calculated for a particular passage, it is possible to extract this data from Sonic Visualiser in order to examine and manipulate it using a spreadsheet program such as Excel. This extracted data takes the form of a series of time values which can be used to calculate a metronome mark (MM) value for every beat; these MM values can then be used to produce a graph that shows the changing tempo in a given piece or section, such as Figure 2.3, which represents a beat-level graph created using a 1910 recording of Massenet's *Meditation* by Fritz Kreisler.

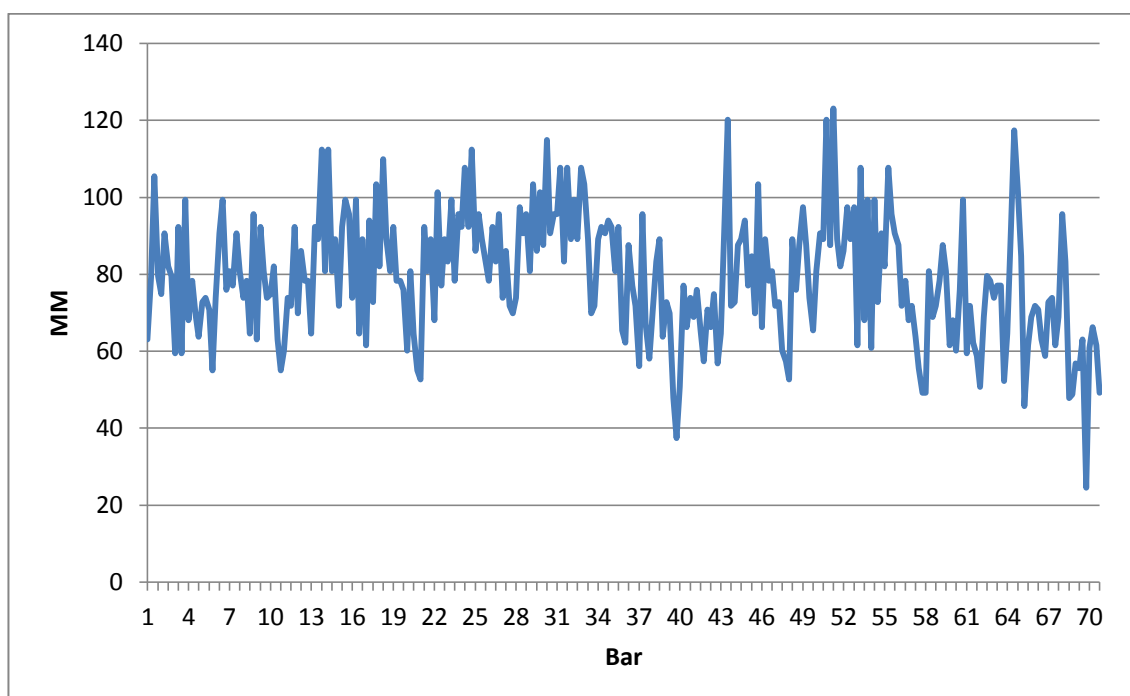


Figure 2.3 Example of a tempo graph.

⁵⁴ These accompanimental passages comprise bars 78 to 87 and, arguably, bars 103 to 106 in which the violin plays a countermelody to the main oboe theme.

These tempo graphs – referred to by Bowen as ‘tempo maps’ – feature heavily in timing-based analytical research.⁵⁵ Indeed, the vast majority of computational analytical methods involve some kind of visual element of representation that complements the original sound, thus creating a kind of augmented listening experience. As Cook explains, computational analysis of performance can be ‘a means by which you become able to see and, more to the point, *hear* the music with greater precision and sensitivity, to enhance your experience of it.’⁵⁶ However, the process of relating such graphic information back to the music is not altogether straightforward and generally requires flitting back and forth between the tempo graph and a score of the piece in question. Relating all of this information back to the actual performance from which it originated can be even more problematic, as it requires reconciliation of these two written media with the recording itself; although large-scale patterns in the graphs can be related to the recorded performance fairly easily, it is far harder to identify smaller-scale features. In addition to these practical issues, concerns have been raised concerning the overall validity of such visual representations of musical time; most notably by Peter Desain and Henkjan Honing in their article ‘Tempo curves considered harmful’:⁵⁷

Of course one should be encouraged to measure tempo curves and use them for the study of expressive timing. But it is a dangerous notion, despite its widespread use and comfortable description, because it lulls its users into the false impression that it has a musical and psychological reality. There is no abstract tempo curve in the music nor is there a mental tempo curve in the head of a performer or listener.⁵⁸

Although variable-specific analytical abstractions such as tempo graphs may not have a true ‘musical and psychological reality’, there is much evidence to suggest that performers really do think in terms of lines and shapes when they are formulating their interpretations; therefore, such visual representations are arguably not as irrelevant to performers as Desain and Honing suggest. Rink argues that:

⁵⁵ Bowen, J. (1993-4) ‘A computer-aided study in conducting’, p. 94.

⁵⁶ Cook, N. (2005) *Op. cit.*, p. 6.

⁵⁷ Desain, P. and Honing, H. (1993) ‘Tempo curves considered harmful’.

⁵⁸ *Ibid.*, p. 19.

Performers typically conceive of melody as a line (whether continuous or not) that they sing to themselves while making music, and a literal graph of melodic contour or shape, over brief or extended passages (in the latter case perhaps depicting successive registral high or low points), may come closer than the original notation to that aural image.⁵⁹

Indeed, abstract visual concepts such as 'line' and 'shape' play an important role in performers' discourse, strongly suggesting that many performers think about music in these terms.

In spite of its merits, computational analysis of music should be approached with a degree of caution in that the act of listening can be reduced or even eliminated entirely in some cases, resulting in an imbalance of perception whereby the analytical focus has shifted too-far from the music itself. A number of steps have been taken in this study, in order to most-usefully relate information from tempo graphs back to what is happening in the music. Firstly, sections of the solo violin part have been approximately superimposed onto the majority of graphic examples, which alleviates much of the initial problem of reconciling features on the graph with specific points in the music. Secondly, Sonic Visualiser allows for graph data to be imported back into the program and displayed on-screen, thus affording the analyst the ability to see and hear what is happening in a given performance simultaneously. Figure 2.4 shows a screenshot of the program taken during playback of the aforementioned *Meditation* recording with the same graph superimposed onto the spectrograph; in addition to the change in tempo from beat to beat, which is represented by the red line, the orange line shows the average tempo from bar to bar. This useful feature has been exploited by the creation of numerous video examples, contained on the accompanying DVD, which greatly aid the interpretation of individual analytical examples contained within the comparative study.

⁵⁹ Rink, J. (2002) 'Analysis and (or?) performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 50.

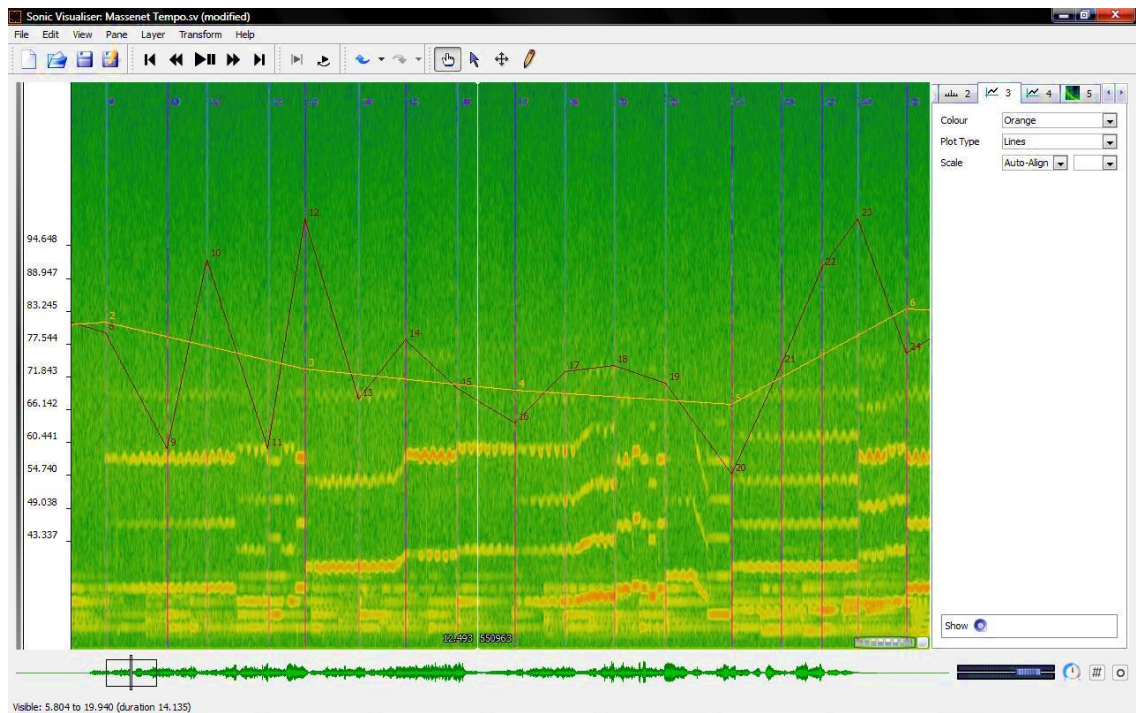


Figure 2.4 Spectrograph superimposed onto a tempo graph.

Beat- and bar-level analysis can be extremely useful in examining the way rubato is manifested at higher levels of the musical structure, such as between sections or phrases; however, a finer level of detail is required in order to capture rubato that takes place at surface level, from one note to the next. Note-by-note analysis is undertaken in essentially the same way as beat- or bar-level analysis, in that the onset times of individual notes are roughly ‘tapped’ and then corrected using a spectrograph, although this process is obviously far more time-consuming and comes with its own issues with regards to the subsequent manipulation of data. Calculating the metronome mark for a given beat is a fairly straightforward process; all one needs to do in order to obtain a value in BPM (beats per minute) is divide sixty by the length of the beat. However, this calculation has to be altered in order to determine a metronome mark for individual notes. For instance, when calculating an equivalent value of BPM for quavers in 4/4 time, one needs to divide thirty by the length of each quaver. This quickly becomes rather complicated in the case of passages where note

values vary considerably, although, once these calculations have been made for note values in a given passage, the resulting formulae can be quickly duplicated when studying multiple sets of performance data. A further practical issue relating to note-by-note analysis is the inability to display the resulting graphs in Sonic Visualiser; at this study's time of writing it is only possible to re-import graph data back into the program in passages that contain notes of equal length. In spite such minor issues, Sonic Visualiser's ability to demonstrate both visually and aurally what is happening in regards to musical time makes it much more straightforward to relate changes in speed with specific musical features. It is also far easier to see how an artist's application of rubato relates to their use of *portamento*; another important expressive device that will be discussed further in the following section.

2.3 Problems in Determining Note Onset Times

The previously-outlined methodology, utilising the 'tapping' input process followed by visual correction using a spectrograph, is relatively robust method in determining note onset times. However, aside from the aforementioned situations when the solo violin does not change notes on each beat, there are further circumstances in which measuring the precise start of a note is not altogether straightforward. Although the following section may appear somewhat tangential, an analyst will almost inevitably encounter these problems when approaching the empirical measurement of recorded music. Four main issues are addressed, along with a number of possible solutions, in order to assist others who may wish to pursue similar lines of study.

2.3.1 *Attack time*

In the case of piano music, determining when a note begins is a relatively easy process; due to the piano's percussive method of sound production, every note begins 'cleanly' with a very short period of attack and it is therefore easy to measure the onset time of

each note with a high degree of precision. Indeed, there is software available that can process an entire piece of music and, so long as the recording is of sufficient quality that the attack of each note is suitably clear, automatically generate data for the onset time of every note in a matter of seconds.⁶⁰ This relative ease of data collection is one of the main reasons that, to date, the vast majority of projects involving the analysis of tempo in recorded music have focused on pianists.⁶¹ Non-keyboard instruments, along with the human voice, can be more problematic when it comes to calculating note onset times; however softly one is playing on a piano, its mechanism dictates that there is always a discrete moment when the hammer is brought down onto the string, whereas non-percussive instruments can exhibit far slower, and therefore less clear, attack times. For example, in wind playing, a huge variety of attack is possible by varying the speed in which air is introduced to the instrument, ranging from a ‘clean’ tongued note with a short, sharp attack to a slower, more breathy attack where the note emerges gradually from nothing. In the case of string playing, aside from *pizzicato* which is fundamentally a percussive effect and other less-common ‘extended’ techniques such as *col legno*, the attack time of a note is governed by the manner in which the bow is initially applied to the string, ranging from a clear start to the note by bow pressure being pre-applied to the string before it starts to move, to a gradual introduction of pressure that results in a comparable attack to the aforementioned ‘breathy’ start to a note in wind playing. For the analyst, notes with a slow attack time and no clear ictus are challenging in that the precise beginning of the note is often difficult to locate. One solution to this problem is to measure its onset from when it becomes audible to the listener. Although this may seem like the obvious solution since we are dealing with an audible phenomenon, it presupposes two things: firstly that everyone listens to that piece of music at exactly the same volume and, secondly, that everyone’s ears are similarly sensitive. Both of these assumptions are clearly unfeasible, particularly when dealing with recorded sound which affords the listener the opportunity to listen to music at whatever volume they please. If the audio were accompanied by video footage of a performance then it would be possible to see precisely when the performer’s bow begins to move; however, in the absence of any

⁶⁰ Various software packages exist that fulfil this purpose, including a number of Sonic Visualiser plugins.

⁶¹ Such studies include Todd, N. (1985) ‘A model of expressive timing in tonal music’ and Cook, N. (1987) ‘Structure and performance timing in Bach’s C major Prelude (WTC1): an empirical study’.

such visual data it is far more practical when calculating note onset times to consult a spectrographic display of the music, in order to visibly locate the earliest appearance of a note in the frequency spectrum. This method in turn raises its own issues, in that different configurations of recording equipment exhibit different degrees of sensitivity: one microphone might pick up a note sooner than another, resulting in it appearing earlier on the spectrograph and an earlier measurement of the onset time. However, inconsistencies in the way in which music has been recorded over the previous century are to some extent unavoidable and the potential margins of error are far smaller than if one were to try to calculate onset times from when notes become audible under ‘average’ listening conditions, whatever they may be.

2.3.2 *Portamento*

Consulting a spectrographic visualisation of the music can help greatly when it comes to measuring the onset times of notes with a slow attack; however, when *portamento* or any other kind of audible position change is introduced, this procedure is somewhat complicated – not so much by practical issues of measurement but instead by issues of perception. *Portamento*, along with non-expressive yet audible changes of position, involves the gradual change in pitch, rather than a sudden jump from one discrete note to the next. This raises the question of where exactly the note onset time of the ending note actually lies: at the start of the slide, at the end of the slide on arriving at the ending note, or at some point in-between. This problem is more-clearly demonstrated by the following diagrams:

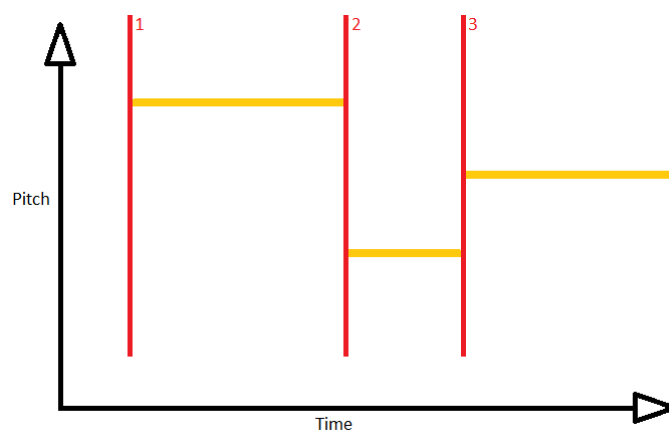


Figure 2.5 Diagram of three notes played without *portamento*.

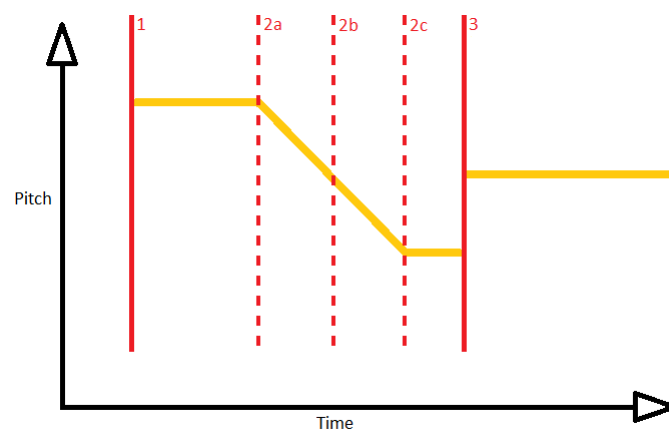


Figure 2.6 Diagram of the same three notes with the addition of a *portamento* between the first two.

Figures 2.5 and 2.6 are both theoretical representations of the same passage of music, whereby pitch (frequency) is plotted against time in the manner of a spectrograph. The horizontal yellow lines represent three different notes and the vertical red lines mark their respective onset times. Figure 2.5 shows three discrete pitches without any *portamento*, whereas Figure 2.6 shows the same three pitches but this time with the addition of a *portamento* between the first two. The three broken red lines, marked 2a, 2b and 2c respectively, represent three possible locations for measurement of the

second note's onset time. Theoretically, there are arguments for each scenario being correct: 2c would at first seem the most obvious choice in that it marks the point in time at which the precise pitch of that note is first heard; however, 2a marks the point of departure from the preceding note and, since the end of one note could logically be seen as the beginning of the next if there is no rest between them, this represents a further option for measuring the following note's onset time. The temporal area that exists between 2a and 2c whilst the *portamento* is taking place can therefore be seen as belonging to the first note or the second or, were it considered to be 'shared' equally by both notes, then the halfway point marked by 2b could even be considered as something of a compromise.

The *portamento* shown in Figure 2.6, if found on a real spectrograph, would represent a slide from one note to the next at a perfectly uniform speed and volume, joining both notes together without any gaps. Although it is possible to reproduce this kind of *portamento* using a synthesiser or other computerised equipment, the physical mechanics of string-playing mean that a number of additional factors govern the manner in which an individual *portamento* is executed and these factors prove crucial in relation to where the following note is perceived to begin. In the case of string playing, there are three main variables which affect the way a *portamento* is executed and subsequently interpreted by the listener: fingering, speed of slide and bowing.

2.3.3 *Portamento fingering*

There are three main kinds of string *portamento*, involving either one or two fingers of the left hand and individually characterised by the way in which the change in position is accomplished:⁶²

⁶² The following terminology is adapted from Flesch, C. (1960) *Violin fingering: its theory and practice*. Although Flesch does not use the term *S-portamento*, this has been added for the sake of clarity when discussing musical examples later in this study.



Figure 2.7 The three main types of *portamento*.

Although other kinds of ‘combination’ slide are possible, these invariably involve one or more of the above three categories. The first kind, which for the purpose of this study will be referred to as the *S-portamento*, is the most straightforward and involves the use of a single finger to slide between positions. The other two involve shifts between two differently-fingered notes, whereby the player can choose either to slide using the beginning finger or the landing finger; these are therefore referred to as the *B-portamento* and the *L-portamento*. The following images exhibit actual manifestations of the three types of *portamento* as displayed on a spectrograph:

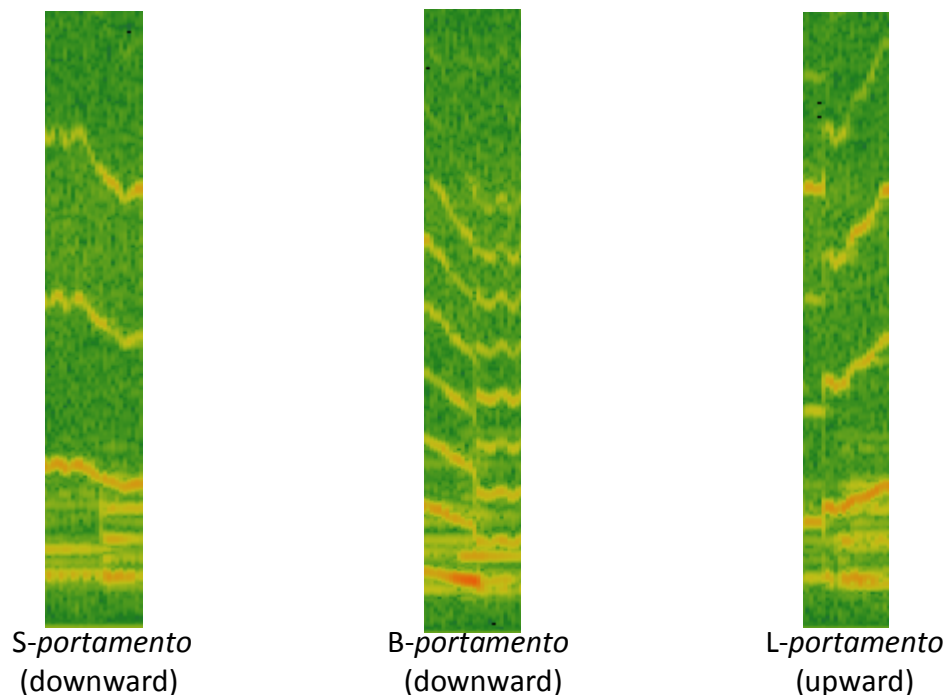


Fig. 2.8 Spectrographic visualisations of the three main types of *portamento*.⁶³

⁶³ These examples are taken from a 1910 recording of Massenet’s *Meditation* by Fritz Kreisler.

Both the B- and the L-*portamento* involve a change of fingers; with B-*portamento* this change happens at the end of the slide and with L-*portamento* at the start. The spectrograph clearly shows this in both cases by a break in the otherwise-continuous line, with a sudden ‘jump’ in pitch as a different finger is put down onto the string.⁶⁴ In the case of S-*portamento*, the single-finger slide is reflected by the continuous line that joins the adjacent notes.

It is important at this stage to differentiate between *portamenti* and other changes of position; *portamento* refers specifically to the expressive connection of two notes, as opposed to a change of position purely for technical reasons. This important difference is described by Carl Flesch in his seminal treatise *Alta scuola di diteggiatura violinistica*:

The gliding from one position to another is called a *glissando* or *portamento*. We qualify as *glissando* the compulsory technical means by which a new position is reached – regardless of whether this gliding is audible or inaudible. A *portamento*, on the other hand, is our term for the audible connection of two tones for the purpose of expression.⁶⁵

This definition of expressive and ‘compulsory’ slides is one that will prove important in the context of the analysis undertaken in chapter 3.

Issues of expressive motivation aside, these two kinds of shift essentially involve the same physical movements. The key issue here relates to how the bow is used during a change of position, which directly affects the slide’s audibility; if adequate bow pressure is applied while a finger of the left hand is shifting position then a slide will be audible, even if this is not intended by the performer. This means that unintended slides are far more likely to be audible in *legato* passages, during which the player tries

⁶⁴ Strictly speaking, in the case of descending B-*portamenti* this jump in pitch occurs when the beginning finger is removed from the string.

⁶⁵ Flesch, C. (1960) *Op. cit.*.

to join the different notes as smoothly as possible – a technique which is achieved by applying constant pressure with the bow and making changes of bow as unobtrusive as possible. In order to change position in such a passage without producing an audible slide it is necessary to actively ‘hide’ the shift, by momentarily releasing the pressure exerted by the bow on the string whilst the change of position is accomplished. In order to preserve the legato melodic line this release of pressure and change of position must be rapid enough so as not to create a conspicuous gap in the sound. This technique of ‘hiding’ shifts requires a lot of skill, both in the use of the bow and also in the degree of coordination required between hands; it is therefore technically far easier for a player to make changes of position audible in *legato* passages than to hide them. Conversely, a player may choose to change position when it is unnecessary, specifically in order to make use of a *portamento*. The theoretical justification for *portamento*, as a means of highlighting an expressive interval, also carries with it the implication that non-expressive, purely technical shifts should be hidden in order to avoid any undesired expressive connotations.

This issue is further complicated by the issue of a performer’s personal tastes – what is considered to be a subtle and almost indiscernible change of position by one player could be regarded as a ‘full-blooded’ *portamento* by another. It is therefore necessary when examining any player’s use, or indeed avoidance, of *portamento* for the analyst to judge whether or not an audible slide is a deliberate *portamento*, based on their knowledge of the particular player’s performing style and, in particular, the manner in which they change position elsewhere in their recorded output. Slides sometimes fall into something of a grey area, in that they could be construed either as a subtle *portamento* or a clumsy change of position, thus necessitating something of an educated guess from the analyst. In the context of this study of musical timing, however, both *portamento* and non-expressive changes of position are measured in the same manner; although it should be noted that non-expressive changes of position will normally involve a single-finger or beginning-finger shift, similar to the execution of an S- or B-*portamento*.

Although almost all *portamenti* can be divided into one of the three aforementioned categories, an astonishing variety of expression is possible through subtle differences in speed and dynamic during the slide.⁶⁶ Whereas the theoretical slide shown in Figure 2.6 is of a constant speed, in reality almost all *portamenti* exhibit some degree of shaping, either through acceleration or deceleration, which results in an arc rather than a straight line when displayed on a spectrograph.



Figure 2.9 Shapes of accelerating and decelerating *S-portamenti*.

In the case of *S-portamento*, there is an unbroken line between the beginning and ending notes, since the same finger is used to slide from one to the other. However, both *B-* and *L-portamento* involve a change of fingers at either the start or end of the slide, thus ‘jumping’ to another pitch and creating a gap in the pitch/time line.

⁶⁶ Although uncommon, it is also possible to execute a ‘combination’ *portamento*, whereby the slide begins with the beginning finger but then the landing finger takes over midway through, before the ending note is reached. This can therefore be thought of as a *B/L portamento*. This unusual slide can be heard in a number of recordings by Fritz Kreisler and Jacques Thibaud.

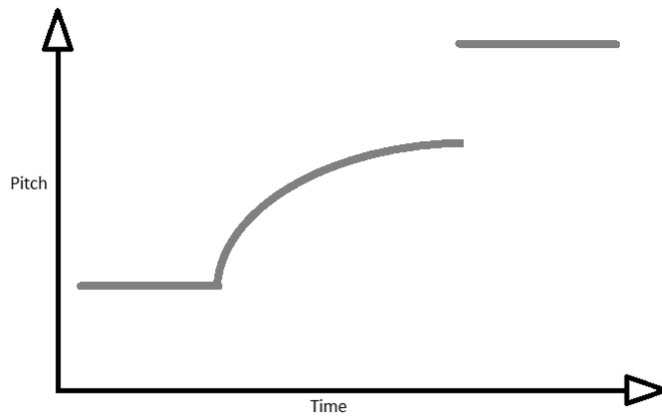


Figure 2.10 Diagram of a B-*portamento* (upward).

The above pitch/time graph is typical of a B-*portamento*, whereby the beginning finger slides between positions before the landing finger is placed on the string at the end of the slide, producing the sudden jump upwards in pitch.

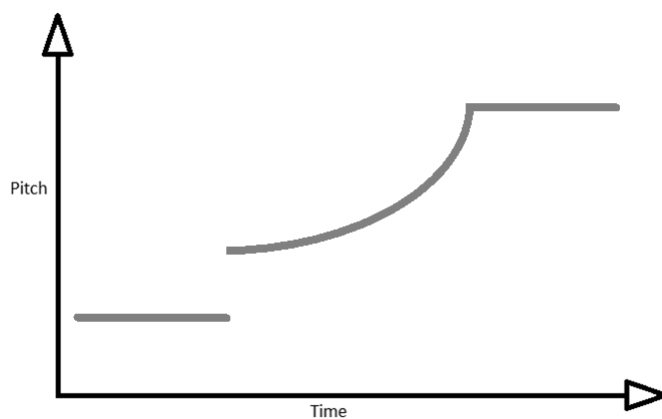


Figure 2.11 Diagram of an L-*portamento* (upward).

The opposite is true with an L-*portamento*, with the landing finger being placed on the string *before* the shift, resulting in a sudden jump in pitch at the beginning of the *portamento* instead. In both cases, the slowest point in the slide is normally the point at which the change of finger occurs, which means that B-*portamenti* tend to involve

deceleration towards the end of the slide whereas *L-portamenti* tend to involve acceleration.

If B- or *L-portamenti* take place during a slur, with no change of bow during the slide, then the listener's ear can usually discern the jump in pitch that takes place when the landing finger is placed down.⁶⁷ This sudden change of note, as opposed to the gradual transition that makes up the rest of the slide is the clearest moment of change between the two notes, and is therefore perceived as the beginning of the landing note. As a result, with a *B-portamento* the onset of the landing note is heard to be at the end of the slide, whereas with *L-portamento* it is perceived to be at the beginning of the slide; in both cases when the landing finger is placed onto the string. This helps to explain why non-expressive shifts involving two fingers almost invariably involve the beginning finger rather than the landing one, in the manner of a *B-portamento*; the resulting emphasis from this kind of shift occurs on arrival at the ending note rather than at the beginning of the slide, thus drawing less attention to the slide itself. In the case of *S-portamento* there is, of course, no change of fingers during the slide and it is other factors such as bowing that govern where the second note is perceived to begin.

2.3.4 *Bowing*

Bowing is another important factor to take into account, both in terms of the execution and subsequent perception of a *portamento*; the changing from one bow-stroke to another, unless accomplished imperceptibly, results in a moment of accentuation in the sound. If a shift is accomplished during a slur then there will be no accentuation provided by a change of bow; however, if a change of bow and a change of position take place in conjunction then the resulting disturbance in the sound will affect the way the shift is heard. In the case of B- and *L-portamento*, standard practice

⁶⁷ It is important to note that the following discussion of the perception of *portamento* represents this author's own subjective observations. At this study's time of writing no other research has been undertaken to this effect; however; listening studies could be a fruitful line of enquiry in terms of future research into the way *portamento* can influence the perception of musical timing.

dictates that the change of bow takes place at the same moment that the landing finger is placed onto the string, either before or after the slide depending on the type of shift. Both the change of finger and change of bow-stroke create accentuation in the sound; therefore, if both happen simultaneously, they are heard as a single sonic event rather than two. If the change of fingers takes place independently from the change of bow then the resulting shift sounds as if it has been poorly-timed and has an unpleasant 'stuttering' effect, by making the landing note sound like it is beginning twice in quick succession.

In the event of a bow-change during an *S-portamento*, the accentuation provided by the change of bow provides the degree of articulation in the sound that is not afforded by a change of fingers, such as is the case with B- and L- *portamento*. Therefore, if the change of bow takes place at the beginning of the slide then this is where the change of notes is perceived to occur and, similarly, if this happens at the end or midway through the slide, the onset of the ending note is heard at that moment instead. Changes of finger and/or bow-stroke provide the listener with an articulatory 'event', during the course of a gradual change in pitch which is perceived to be the beginning of the next note; however, a problem still exists for analysts in the case of *S-portamenti* that take place during a slur, in that there is neither a change of fingers nor a change of bow-stroke to articulate the shift. In the absence of accentuation provided by a change of bow or finger, subtle differences in the speed and dynamic during the slide can influence the way in which it is perceived by the listener and, as a result, where the second note is heard to begin. In the case of slower slurred single-finger slides, the onset of the ending note is generally perceived to be at the end of the slide, on arriving at the target pitch. It is arguable that because the slide is slow and there is no articulation midway such as a change of finger or bow-stroke, the listener hears the arrival at the destination pitch as an event in itself in that it marks the end of a gradual transition between the notes. With quicker shifts, however, when the finger slides fast enough for the slide to be heard as a discrete musical event rather than a gradual process, the listener's attention tends to be drawn to the beginning of the slide rather than the arrival on the following note.

These issues surrounding the influence of *portamento* on the perception of musical timing are in themselves significant, as the expressive device can be seen to somewhat ‘blur’ the transition between notes, both in terms of timing and pitch, which arguably plays a vital part in the overall expressive effect of the device. Whilst much of the preceding discussion of *portamento* in relation to musical timing is somewhat subjective, such issues have played a major role in the measurement of musical timing in this study and should therefore be taken into consideration in terms of the resulting analytical information.

Chapter 3. Comparative Study of Rubato in Recorded Performances of Brahms' Violin Concerto in D major, Op. 77, *Adagio*, Made Between 1927 and 1973

This comparative study provides a detailed examination of musical timing in thirty different recordings of the second movement, *Adagio*, of Brahms' Violin Concerto in D major, Op. 77 made between 1927 and 1973, in order to compare the different ways that performers make use of rubato as a means of expression during this period. This particular work has been chosen as the subject for analysis because of its consistent popularity throughout the twentieth century amongst audiences and violinists alike; as a result the piece has an extremely healthy recorded legacy and, thanks to the ever-growing popularity of historical recording reissues, the majority of these recordings are presently available commercially in modern digital formats, thus lending themselves well to computational analysis. The earliest recording used in this study, featuring Fritz Kreisler with the Berlin State Opera Orchestra under the baton of Leo Blech, represents one of the first complete recordings of the concerto. Isaac Stern's 1973 recording has been chosen, albeit somewhat arbitrarily, as the cut-off because the scope of this study is confined to violinists who were active during the inter-war period of the twentieth century.

This substantial chapter has been designed to lead the reader logically through a relatively small portion of the vast amount of analytical data that has been generated during the comparative study, beginning with examinations of the music at a higher level before delving into an abundance of detailed examples. Given the interconnectedness of different performance characteristics in many of the musical examples, this study examines the music section by section, in order to demonstrate how these characteristics are manifested in any given passage of the movement.

The second movement of the concerto, *Adagio*, contains only four markings from Brahms pertaining to alterations of tempo: a *ritardando* in bars 54 to 55, a *più largamente* at bar 56, a pause over the rest at the end of bar 63 and a *calando* marking from bar 75 to 78. As this study is primarily concerned with interpretation, this minimalism in notated instructions means that the music provides a relatively ‘clean slate’, with which to examine different interpretive approaches to rubato in the same piece of music. The performances will be examined on a number of different levels, from the pacing of the movement as a whole down to detailed analysis of individual phrases and note figurations, with the aim of establishing idiosyncratic characteristics of individual performers’ playing styles as well as looking at any instances of common practice or general developments over the period as a whole.

Around sixty commercial recordings were made of Brahms’ Violin Concerto during this period, with a number of artists recording the piece more than once. The Russian violinists Leonard Kogan and David Oistrakh have been the most prolific in this regard, recording the piece no less than four and five times respectively.¹ In selecting which recordings to include in this study a number of factors have been considered. In order to compile a representative sample that accurately reflects style over the period as a whole it is beneficial to include as many recordings as possible; however, the scale of this study proves something of a limiting factor given that one of the principal aims is to deal with individual players in detail. By examining thirty recordings, which represents approximately fifty percent of the overall potential sample size, it is possible to make useful comparisons whilst still allowing for more-detailed examination of the minutiae. Effort has been made to include recordings by the most commercially-successful violinists of the period, which has the added benefit of the recordings usually being more readily available today. Although it is arguable that the most successful musicians are often those who ‘stand out from the crowd’ and are therefore not necessarily representative of the masses, the commercial success of those performers selected for examination in this study suggests that they are perhaps more likely to reflect what was considered ‘tasteful’ in performance during the period

¹ For details of these recordings see Discography on pp. 298-299.

than lesser-known artists. Multiple recordings by certain key figures have been included to facilitate comparison of different performances by the same artist, in order to ascertain if and how these performances vary over time and with inconsistent performing conditions. Here is a chronological list of the thirty recordings that feature in this comparative study:

Year	Soloist	Conductor	Orchestra
1927	Fritz Kreisler	Leo Blech	Berlin State Opera
1928	Joseph Szigeti	Hamilton Harty	Hallé
1936	Fritz Kreisler	John Barbirolli	London Philharmonic
1937	Georg Kulenkampff	Hans Schmidt-Isserstedt	Berlin Philharmonic
1939	Jascha Heifetz	Serge Koussevitzky	Boston Symphony
1944	Bronislaw Huberman	Artur Rodzinski	Philharmonic-Symphony
1945	Ginette Neveu	Issay Debrowen	Philharmonia
1945	Joseph Szigeti	Eugene Ormandy	Philadelphia Symphony
1948	Ossy Renardy	Charles Munch	Concertgebouw
1949	Yehudi Menuhin	Willhelm Furtwängler	Lucerne Festival
1950	Nathan Milstein	Victor de Sabata	New York Philharmonic
1952	David Oistrakh	Kyrill Kondrashin	USSR State Symphony
1953	Christian Ferras	Rudolf Kempe	Hessischen Rundfunks
1953	Leonard Kogan	Karl Eliasberg	USSR State Symphony
1953	Wolfgang Schneiderhan	Paul van Kempen	Berlin Philharmonic
1954	Johanna Martzy	Paul Kletzki	Philharmonia
1954	Christian Ferras	Carl Schuricht	Wiener Philharmoniker
1954	Nathan Milstein	William Steinberg	Pittsburgh Symphony
1955	Gioconda de Vito	Rudolf Schwarz	Philharmonia
1955	Jascha Heifetz	Fritz Reiner	Chicago Symphony
1955	David Oistrakh	Franz Konwitschny	Staatskapelle Dresden
1958	Zino Francescatti	Dmitri Mitropoulos	Wiener Philharmoniker
1958	Arthur Grumiaux	Eduard van Beinum	Concertgebouw
1958	Leonard Kogan	Charles Bruck	Concerts du Conservatoire
1958	Yehudi Menuhin	Rudolf Kempe	Berlin Philharmonic
1960	Nathan Milstein	Anatole Fistoulari	Philharmonia
1961	David Oistrakh	Malcolm Sargent	London Philharmonic
1967	Henryk Szeryng	Rafael Kubelik	Bayerischen Rundfunks
1970	David Oistrakh	George Szell	Cleveland
1973	Isaac Stern	Eugene Ormandy	Philadelphia

Table 5.1 List of recordings, detailing soloist, conductor and orchestra.

All of these recordings were obtained digitally as compact disc reissues, except for six that were downloaded from the British Library's Sound Archive.² There is a particularly high concentration of recordings dating from the period directly following the Second World War which, although creating something of an uneven chronological distribution over the period as a whole, approximately reflects the overall spread of the piece's recorded legacy. This period was one of rapid expansion for the recording industry, with cheaper recording technology facilitating the emergence of 'a multitude of new labels produced by a host of small companies' across Europe and the USA.³

Comparing common patterns in musical timing generally involves the examination of music at higher structural levels, such as entire sections or phrases, whereas studying the idiosyncrasies of individual performers predominantly concerns lower structural levels such as individual note figurations; however, these two contrasting lines of enquiry are far from mutually exclusive, in that small-scale use of rubato can often have an impact on the phrase, or indeed section, as a whole. For this reason, the following analysis has been structured so as to examine the movement section by section, in order to ensure that the frequently-significant impact of these small-scale changes of tempo is sufficiently integrated into their wider musical context. As well as the visual representation of examples in the form of tempo graphs, video examples have been created using Sonic Visualiser and included on the accompanying DVD, which allows for the consolidation of a given graphic representations with the relevant recorded excerpt.⁴ The use of these video examples represents something of an innovation in this kind of study; the ability to see and hear simultaneously the way

² These six recordings consist of those by Kulenkampff (1937), Martzy (1954), Oistrakh (1955), Renardy (1948), Schneiderhan (1953) and Szigeti (1945).

³ See Day, T. (2000) *A century of recorded music*, p. 93.

⁴ These numbered video examples are referred to throughout the comparative study and included on the accompanying DVD. The videos are encoded in .mp4 format, which should allow them to be played back on most computers and DVD players. If the reader encounters any playback problems then an alternative media player may need to be downloaded in order to view them on a computer. It should be noted that the videos files have had to be compressed to some degree in order to fit onto the DVD which, unfortunately, has resulted in some loss in audio quality.

timing is manipulated during performance in this way is valuable in that it grounds any empirical observations firmly within their specific musical context.⁵

3.1 Entire Movement

We will begin the comparative study on a macroscopic level, by examining the movement as a whole at beat-level.

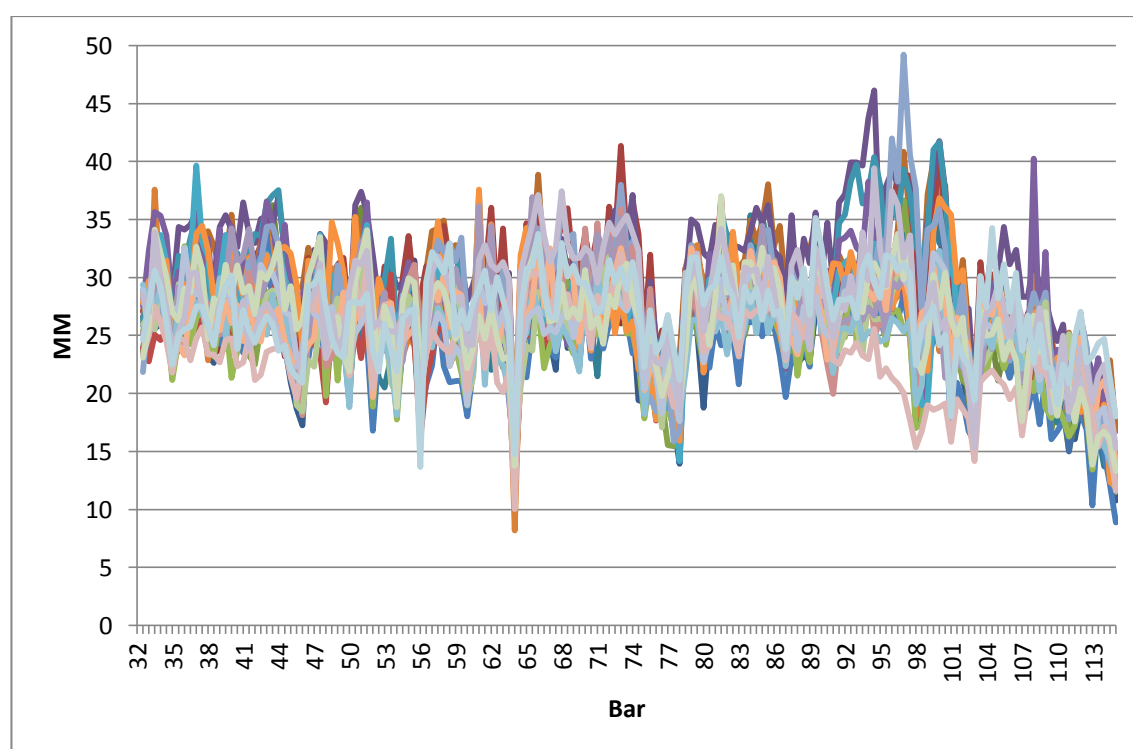


Figure 5.1 Beat data, whole movement, all performances.

Although this graph, along with others of a similar complexity, is difficult to interpret given the thick bundle of individual lines, it does help to convey an overall picture of where and to what extent performances fluctuate most in tempo. Initially, crotchet

⁵ See chapter 2, pp. 83-87.

beat data was extrapolated for the whole movement, minus the first 31 bars of orchestral exposition and the final two bars, using the tapping method followed by visual correction with the beats superimposed onto a spectrographic visualisation of the music.⁶ The final two bars have been omitted because the solo violin sustains a tied F and any other changes of note, and therefore tempo, are confined solely to the orchestral accompaniment. Figure 5.1 shows changing tempo in the movement as a whole, with each of the thirty performances represented by a different coloured line on the graph.⁷ Each of these lines can be seen as a kind of ‘tempo contour’, which visually represents the changing tempo throughout an individual performance. Although this graph contains a huge amount of information and is of little help in terms of detailed comparison, on closer inspection and by relating it back to the music we can already see a number of patterns emerging. Perhaps the most immediately striking feature of this graph is the lack of consistency in the tempo of individual performances – in each one the tempo appears to be in a state of constant fluctuation, as signified by the often-wildly zigzagging lines. This seemingly-constant state of fluctuation appears to support Mahler’s assertion regarding the irrelevance of metronome marks: ‘for unless the work is vulgarly ground out in barrel-organ style, the tempo will have already changed by the second bar.’⁸ The reduction of such complexity to a single tempo instruction would seem rather illogical, unless it is considered to be no more than a vague guideline as to how to proceed, which resonates somewhat with Brahms’ statement that ‘I myself have never believed that my blood and a mechanical instrument go well together’.⁹ In spite of the chaotic nature of this graph, the only four notated changes of tempo in the score are clearly discernible:

⁶ See chapter 2, pp. 89-94 for more information on this method and its relative accuracy.

⁷ In the case of graphs showing all thirty performances a legend has been omitted because the complexity of each graph is such that most individual lines are too difficult to discern, particularly as they are layered on top of one another.

⁸ See chapter 1, p. 37.

⁹ Henschel, G. (1907) *Personal recollections of Johannes Brahms*, p. 78. Cited in Sherman, B. D. (2003) ‘Metronome marks, timings, and other period evidence regarding tempo in Brahms’, in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 99.

- the *ritardando* in bars 54 and 55
- a *più largamente* at bar 56
- a pause over the hemidemisemiquaver rest at the end of bar 63
- a *calando* marking from bars 75 to 78

Unsurprisingly, all four of these indications coincide with substantial reductions in tempo on the graph in all thirty performances; however, in spite of the limited indications offered by Brahms in the score, the tempo of the music is almost constantly fluctuating as a result of performers employing rubato at a variety of different structural levels.¹⁰ There are a number of additional points, for instance bars 45, 98 and 102, where performers tend to slow down considerably, in spite of there being no indication to that effect in the score. In this study's context of visual representation, the fluctuation of tempo within a performance will be referred to as 'tempo shaping', in that discernible shapes are created within the tempo contour of a performance; this kind of terminology seems particularly appropriate in that the notion of 'shaping' is one that appears frequently in performers' discourse concerning musical expression.¹¹ The most apparent instance of 'extra-notational' flexibility of tempo comes at the end of the movement where, without exception, a *ritardando* is made from around bar 103 onwards, although again nothing to this effect is indicated in the score. The greatest amount of deviation between the lines, and therefore the most variety between performers' use of rubato, occurs in the latter third of the graph, between bars 92 and 102.

It is important to note that the length of each beat, from bar 32 until the end of the movement, is not always determined by the soloist. Where there is a change of note on the beat in the solo violin line, this change is always used to measure the onset of the beat in the context of this study; however, as one might expect, there are a number of instances where the soloist does not play a note on the beat, namely in places where there is either a note tied over or a rest. For example, the downbeat in

¹⁰ Although this graph is obviously far too crude to tell us much about the precise tempo fluctuations within individual performances, it does help to show how performers generally approach the passage.

¹¹ See chapter 2, pp. 98-99.

bar 33 is not determined by the soloist as they are still playing a C-natural tied over from the previous beat until the second semiquaver in the bar. Disregarding the first 31 bars of orchestral exposition and the final two bars, there are a total of 55 instances where the soloist is not in direct control of the beginning of a given beat: 25 due to a note being tied over and 30 due to the presence of a rest or orchestral tutti when the soloist does not feature at all. These beat onsets, controlled as they are by a combination of the conductor and orchestra, have instead been measured from a change of note in the orchestral texture. There are some cases where this can be problematic, for example if the orchestra is not entirely together and instruments begin a given beat at different times. In these scenarios the onset time is measured from the most prominent instrument in the orchestral texture: typically whichever instrument has the melody at that time. Such discrepancies are not hugely important, however, so long as the analyst is aware of where they occur, as they do not affect measurements pertaining to the solo violin line, which is the primary focus of this study.

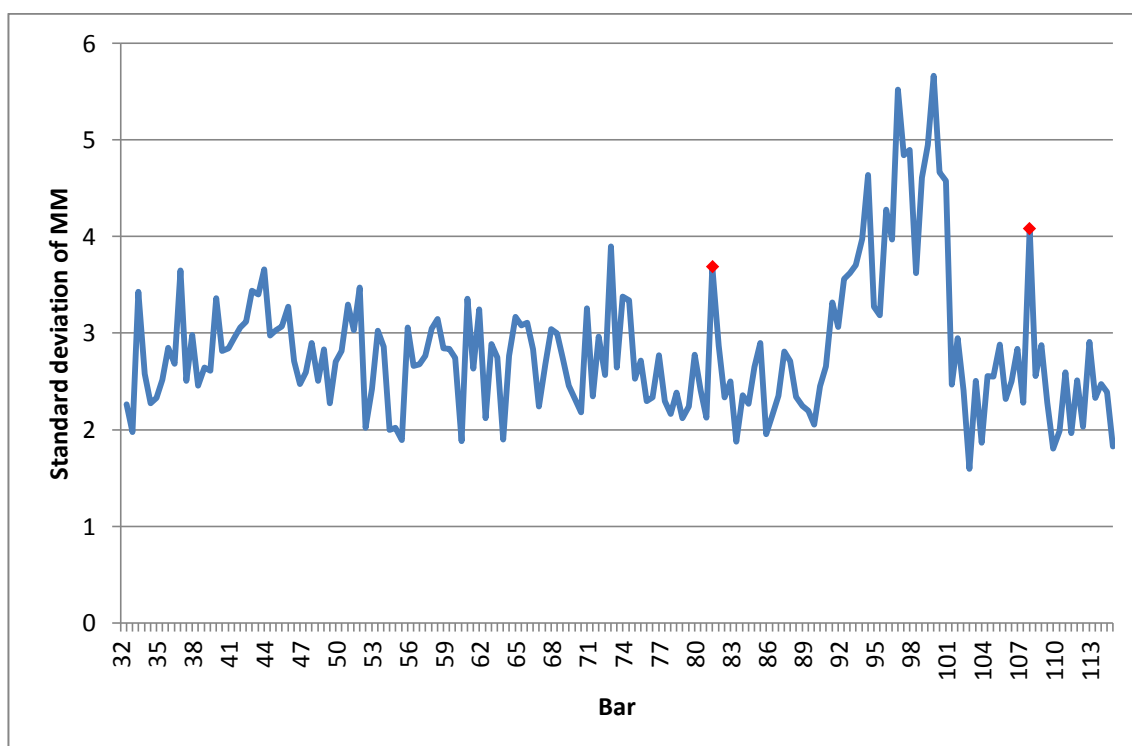


Figure 5.2 Standard deviation calculated for each beat, all performers.

Figure 5.2 more accurately demonstrates the amount of variation between all thirty performances during the course of the movement, based on values of standard deviation that have been calculated for each beat, confirming that the greatest degree of variation occurs between bars 92 and 102.¹² This emotionally-charged passage, marked *espressivo poco a poco crescendo*, is the final statement of the opening subject material and represents the climax of the movement, both thematically and expressively. The orchestra plays little more than an accompanying role during this passage and the texture consists mainly of sustained chords with occasional melodic interjections, such as the horn's imitation of the solo violin line in bars 93 to 94 and an arpeggiated pizzicato string figure in bars 95 to 97. This simple texture coupled with a particularly expressive melodic line provides a particularly inviting opportunity for the soloist to employ rubato relatively freely without danger of dislocation from the accompanying orchestral texture, representing what Repp would term a 'point of high flexibility', 'where the music is less cohesive and invites the performer to 'stretch' or 'bend' it.'¹³ This opportunity is exploited in a variety of ways by different performers, as will be discussed in due course. The two data points marked with a red diamond have exceptionally high deviations and do not fall into the general pattern of the graph; they relate to bar 81, beat 1 and bar 108, beat 2 of the piece.¹⁴ However, neither of these beats is controlled by the soloist as their note is tied over from the previous beat. For this reason these anomalies should be disregarded as they concern the relationship between the soloist and orchestra's placement of beats, a potential area of interest but one which lies beyond the scope of this study.

As a starting point for more-detailed examination, Figure 5.3 represents a theoretical 'average' performance, whereby the MM value for each beat is the arithmetic mean of

¹² In statistics, standard deviation shows how much variation or dispersion exists from the mean. Here it numerically demonstrates the extent of performers' deviation from the 'average' performance.

¹³ Repp, B. (1999) 'A microcosm of musical expression. II. Quantitative analysis of pianists' dynamics in the initial measures of Chopin's Etude in E major', p. 1982.

¹⁴ The second beat of bar 108 represents a particularly expressive point in the coda, therefore an increased degree of flexibility employed by soloists might explain this apparent dislocation between the solo line and its accompaniment. The high deviation exhibited during first beat of bar 81, however, seems more likely to be caused by nervous horn players, who have a tendency to rush slightly during this exposed entry.

all thirty performances. Although this average performance does not exist in the sense that it never actually took place, it eliminates anomalous data resulting from unusual rubato to a considerable extent and, therefore, shows us the most predictable features a performance of this piece might contain. This is not to be seen as an attempt to standardise the thirty performances by disregarding anything that does not reflect common practice, rather it serves to further highlight those points where a particular performer deviates from the norm, so that the individuality of their interpretation can be studied in greater detail. As Cook explains, ‘the average profile... represents an aspect of the horizon of expectations against which an individual performance might be heard.’¹⁵

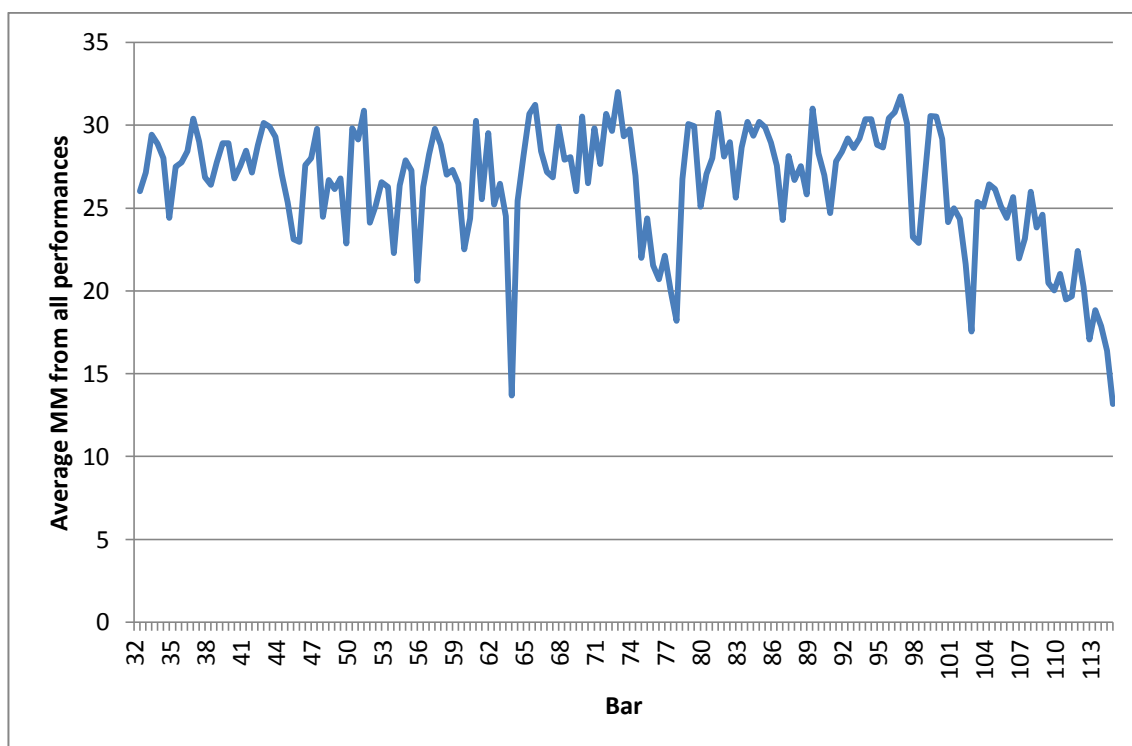


Figure 5.3 Theoretical ‘average’ performance.

¹⁵ Cook, N. (2009) ‘Changing the musical object’, in Blazekovic, Z. (ed.) *Music’s intellectual history*, p. 783.

Again, the notated pause over a rest at the end of bar 63 is clearly visible, representing the most sudden change of tempo in the movement, as one might expect, at approximately double the length of the surrounding beats. The *calando* from bars 75 to 78 appears generally to be preceded by a quickening of tempo that starts around bar 67. Following this, there is a clear tendency to slow down into the melodic climax at bar 98 (marked *espressivo dolce*) and again on the last beat of bar 102 as the final coda section begins with a perfect cadence. From the start of the coda there is a gradual slowing to the end, as the movement draws to a close.

By subtracting these average MM values from each individual performance, a series of 'residual tempo' values have been obtained, which demonstrates most obviously how each performance deviates from the average. Cook states that 'the more such standard components of performance timing we can account for and subtract from the tempo profile of any individual performance, the more the resulting profile will highlight what is idiosyncratic about that performance rather than the general stylistic norms that inform it.'¹⁶ For the purposes of statistical comparison, these residual values are arguably more useful than the raw data, in that they highlight more clearly where and how individual artists differ most from the norm; however, the resulting values are far less useful when examining musical timing from a musicological point of view, in that they do not directly relate to the way timing is manifested during any one performance.

¹⁶ Cook, N. (2009) *Op. cit.*, p. 785.

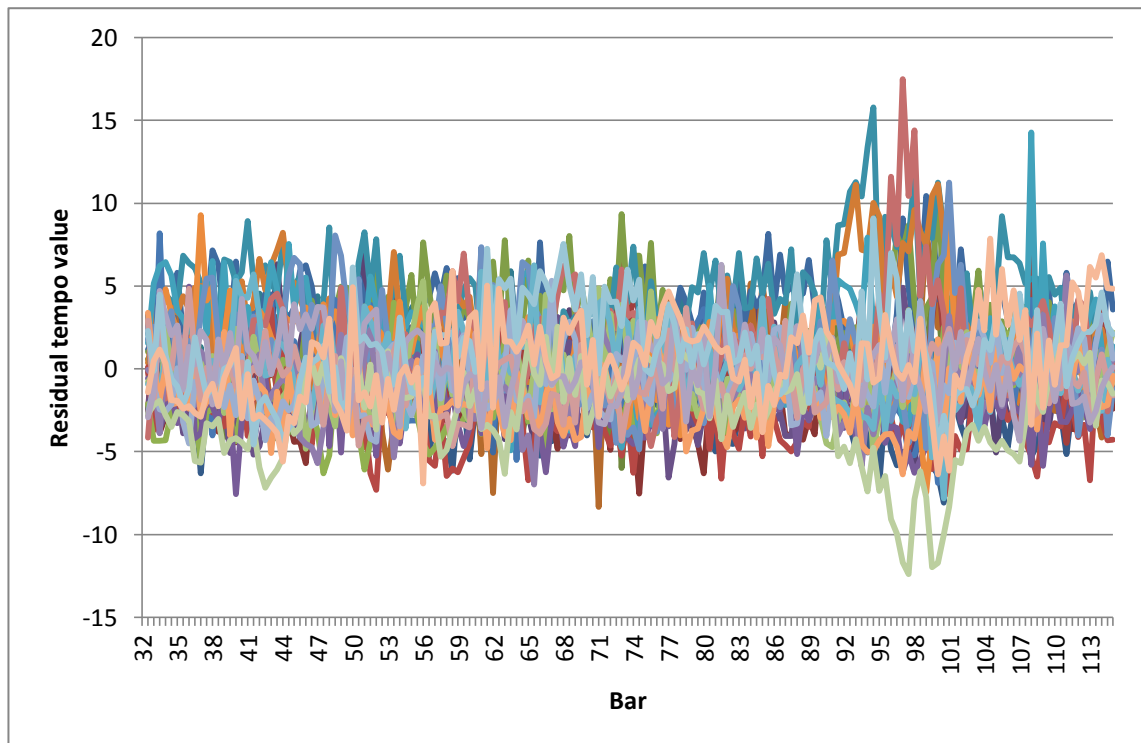


Figure 5.4 Residual beat data, whole movement, all performances.

Although, as with Figure 5.1 which compared beat data for all thirty performers, this graph of the movement as a whole is too complex to offer much in terms of comparing performances, it further reinforces the fact that the greatest amount of variety between performances occurs between bars 92 and 102.

Before looking at rubato usage in detail, it is interesting to examine the tempo of the movement as a whole, in light of Joachim's previously cited recommendations.¹⁷ The numerically averaged tempo and standard deviation of beat length have been calculated for each performance and the following table and graphs show this information in relation to the year in which the recording was made.

¹⁷ See chapter 1, p. 65.

Year	Soloist	Average tempo (bpm)	Standard deviation of beat length
1927	Fritz Kreisler	30.96	5.185
1928	Joseph Szigeti	27.68	4.552
1936	Fritz Kreisler	28.44	5.271
1937	Georg Kulenkampff	26.24	4.425
1939	Jascha Heifetz	26.51	4.184
1944	Bronislaw Huberman	26.58	4.119
1945	Ginette Neveu	27.85	5.448
1945	Joseph Szigeti	26.91	3.621
1948	Ossy Renardy	25.98	3.568
1949	Yehudi Menuhin	24.89	4.059
1950	Nathan Milstein	27.72	4.787
1952	David Oistrakh	25.83	3.935
1953	Christian Ferras	24.46	4.269
1953	Leonard Kogan	28.91	4.811
1953	Wolfgang Schneiderhan	25.91	3.822
1954	Christian Ferras	25.68	3.854
1954	Johanna Martzy	23.53	4.130
1954	Nathan Milstein	27.26	4.512
1955	Gioconda de Vito	23.77	3.561
1955	Jascha Heifetz	29.46	4.276
1955	David Oistrakh	25.56	3.957
1958	Zino Francescatti	26.12	4.889
1958	Arthur Grumiaux	27.40	3.975
1958	Leonard Kogan	25.16	4.041
1958	Yehudi Menuhin	24.29	4.059
1960	Nathan Milstein	27.39	4.861
1961	David Oistrakh	24.63	4.379
1967	Henryk Szeryng	26.66	4.371
1970	David Oistrakh	24.63	3.417
1973	Isaac Stern	23.67	3.948

Table 5.2 Table of average tempos.

Joachim's recommendation of 'quaver = etwa 72' works out as 36 crotchet beats per minute, which is markedly quicker than the average tempo in any of the above performances. Naturally, these average tempos differ from a recommended tempo for the movement in that they are affected by changes to the general tempo such as pauses and *ritardandi*; however, there are very few instances of individual bars being that quick in these thirty performances, let alone approaching that speed as an average tempo. Indeed, Joachim's 'quaver = etwa 72' has more of an *Andante* feel to it than the *Adagio* marked by Brahms, at least from a modern perspective. Interestingly, the autograph score shows that the movement was originally marked *Un poco larghetto* and subsequently altered to *Adagio* during one of the early stages of Brahms' revisions, which suggests that the composer may have originally conceived a slightly quicker tempo.¹⁸ Of all the thirty performances in this study, the earliest exhibits the quickest average tempo: Kreisler's 1927 recording with Leo Blech. Figure 5.5 demonstrates that there is a weak but perceptible correlation between the average tempo and year of recording, whereby the performances tend to get slower over time, although the overall range of tempos is fairly narrow from 30.96bpm in Kreisler's 1927 recording to 23.53bpm in Martzy's from 1954. In this context and given that pauses and *ritardandi* are included in these calculations of average tempo, Joachim's recommendation which dates from around the turn of the century, although much quicker than most of the recordings examined here, would appear to fit slightly more comfortably into the general trend than would first appear. More-accurate calculations towards ascertaining a 'general' tempo would be possible by disregarding data affected by pauses and *ritardandi*; however, as explained previously, this study is principally concerned with rubato than the overall pacing of the movement.

¹⁸ See appendix A, p. 283 for an image of the first page of the *Adagio* from Brahms' autograph score.

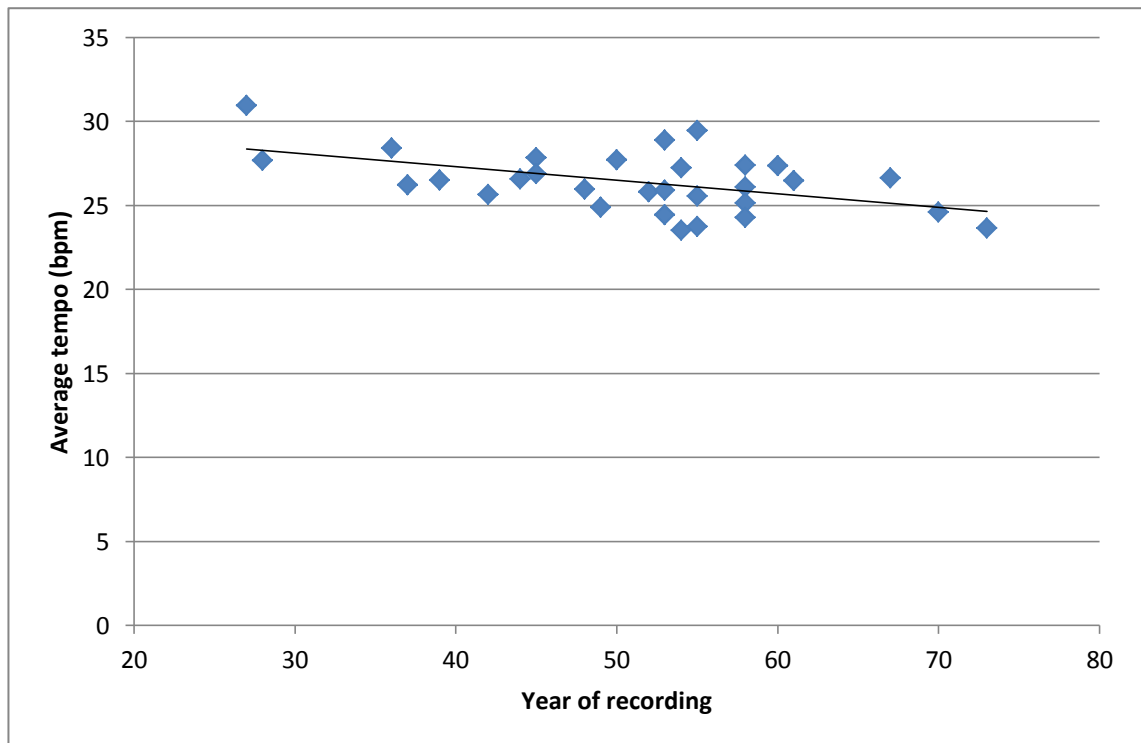


Figure 5.5 Average tempo and year of recording.

By calculating the standard deviation of beat length in a given performance it is possible to get a very rough idea of to what extent flexibility of tempo is employed, demonstrating a weak general trend towards the beat length becoming more consistent over time, which suggests at first glance that the use of rubato may have become more restrained in later recordings.

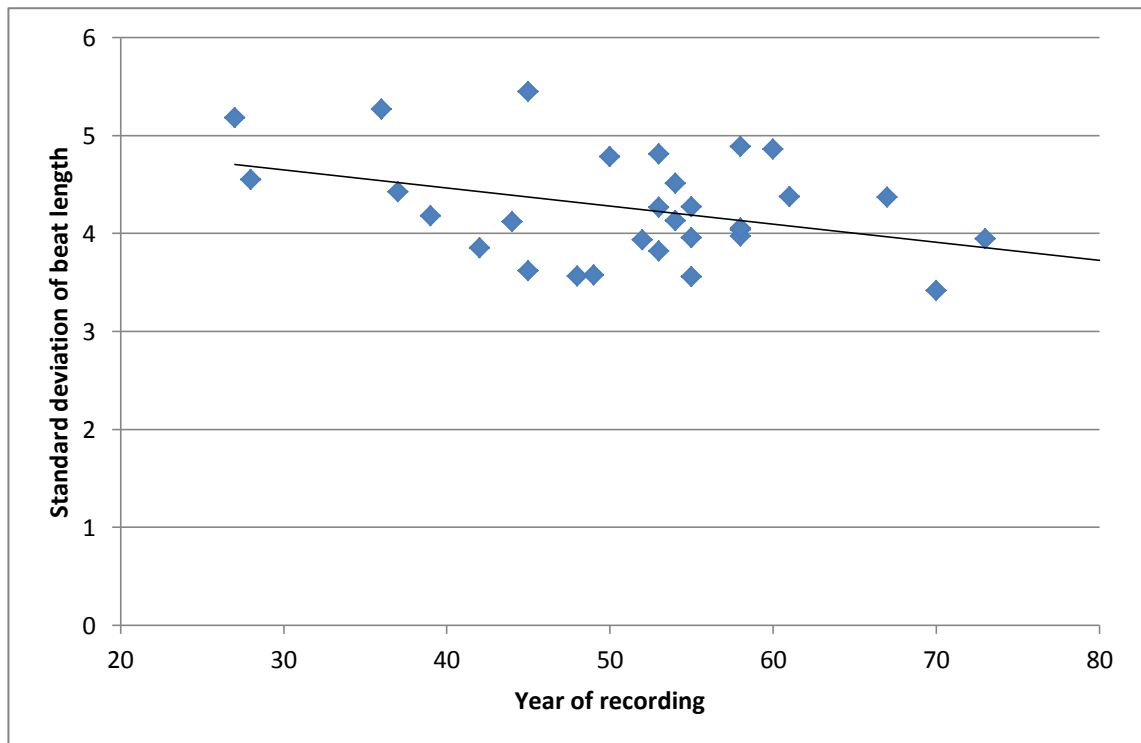


Figure 5.6 Standard deviation of beat length and year of recording.

Each section of the piece, with the exception of the orchestral tutti, will now be examined in turn, in order to demonstrate how different kinds of rubato are utilised within specific musical contexts. The scale of this study prohibits detailed discussion of every phrase in all thirty performances so just a few performers have been chosen as the subject for examination in each section, along with some explanation of how these individuals relate to the other performances.

3.2 Bars 32 to 46

The first solo violin entry begins in bar 32, following a lengthy orchestral exposition, and takes the form of what is essentially a single fourteen-bar phrase:



Figure 5.7 Opening violin entry, bb. 32-46, solo violin part.¹⁹

Structurally, this typically lengthy Brahmsian phrase can be broken down into shorter ‘sub-phrase’ units based on its melodic content: the first six bars consist of two ‘mirrored’ sub-phrases, in which the first and third bars are transposed up and down by an octave respectively, with altered arpeggiation in the intervening bar. This is followed in bars 38 to 41 by two shorter two-bar sub-phrases and then finally a longer four-bar sub-phrase, dynamically shaped by a *crescendo* and *diminuendo*, which rounds off the passage. The phrase can therefore be interpreted as having the following internal structure: A A₁ B B₁ C, which results in a 3+3+2+2+4 bar structure. As outlined in the previous chapters, musical timing is one of the principal means by which a performer articulates phrase structure and in this opening phrase we can see a wide variety of interpretive approaches taken by different performers with regards to rubato.

¹⁹ All of the score-based examples in this chapter are based on Clive Brown’s Urtext edition, published by Bärenreiter Verlag in 2006.

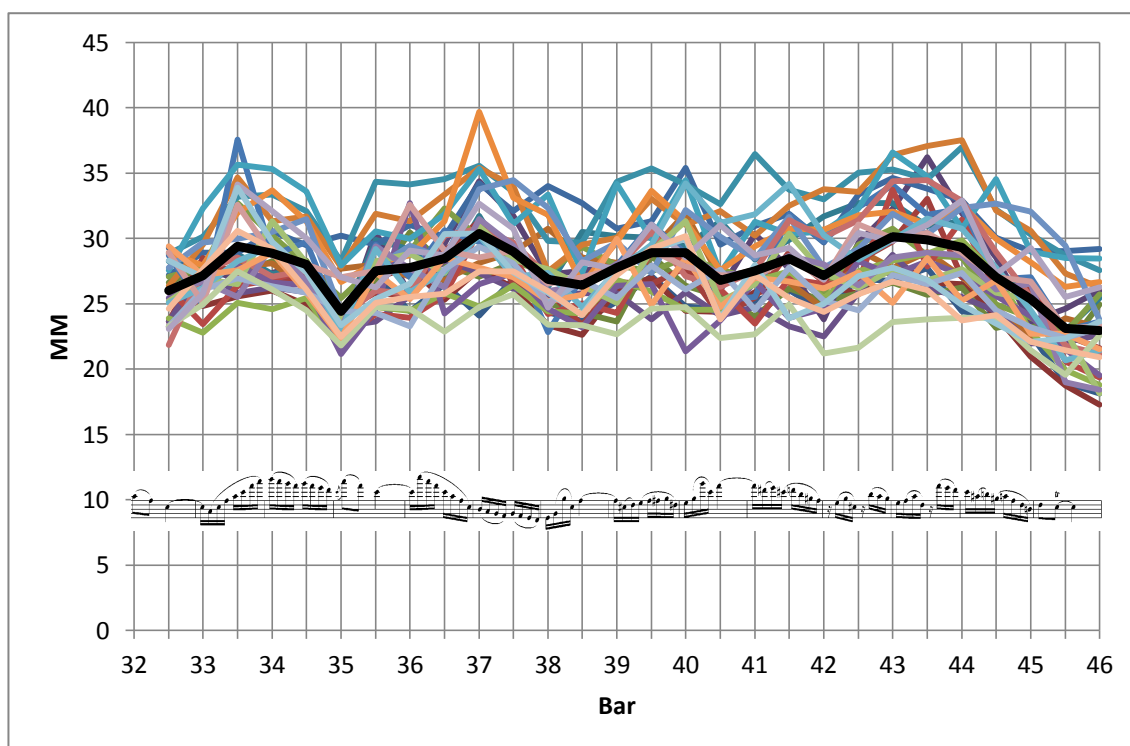


Figure 5.8 Beat data, bb. 32-46, all performances.

Figure 5.8 represents all thirty performances of the opening violin entry, showing the metronome mark for every crotchet beat. In order to aid interpretation the solo violin part has been superimposed onto the graph to give more of an idea of how this data relates back to the music, along with a thicker black line which shows the theoretical average performance.²⁰ The solo violin part has been aligned so that MM value for each beat on the graph is roughly lined up with the end of each beat on the score; this configuration is arguably most intuitive as it is at the end of each beat that the beat length and therefore the MM is measured, which is also consistent with the way in which tempo graphs are displayed in Sonic Visualiser, as will shortly become clear when specific passages are examined using the program. It is apparent from the incongruent lines on the graph that there is a huge amount of variety in the way this opening passage is interpreted, although it is immediately possible to see some patterns emerging which are also reflected in the contour of the average performance:

²⁰ These score excerpts are intended as a visual reference rather than a substitute for the score itself. For the sake of clarity to this end, clefs, key signatures and other details have been omitted.

the majority of performers slow down during the second beat of bar 34, which marks the end of the first sub-phrase unit, A, and there is also a clear tendency to slow down from the second beat of bar 43 to the end of the passage. The second beat of bar 34 effectively contains an extra note, given that almost every performer places the grace note at the beginning of bar 35 before the downbeat, which goes some way to explain the slowing; however, at this slow tempo it would be fairly straightforward to apply some degree of compensation by shortening the preceding semiquavers in order to maintain a steady pulse, suggesting that this slowing is largely deliberate rather than borne out of necessity.

3.2.1 *Tempo contour*

The average performance displays five distinct arch shapes within its contour, which roughly conforms to the 3+3+2+2+4 bar structure outlined previously; an arch in this context represents a shape that is given to a passage of music using a small-scale *accelerando* followed by a *rallentando*, much in the way that phrases are shaped dynamically by way of *crescendo* and *diminuendo*. In the average performance, the arches representing the two-bar B and B₁ sub-phrases start half a bar later than one might expect, resulting in a 3+3.5+2+1.5+4 arch structure. This can be partially explained by the fact that the A₂ sub-phrase ends on the first semiquaver of bars 38, with the new sub-phrase not beginning until the second semiquaver, with the same happening in bar 40.



Figure 5.9 Irregular phrase length in the opening violin entry.

As a result of this irregular phrasing, the first beat comprises both a slowing at the end of the previous phrase and a quickening at the start of the new one, which can only be reflected by a tempo graph if the passage is analysed on a more-detailed note-to-note level.

The average performance demonstrates a smooth, arched tempo contour which outlines the sub-phrase structure of the opening passage; however, this performance is purely theoretical and, in reality, there is much variety in the way individual performers shape this opening section. Giaconda de Vito and Isaac Stern maintain the steadiest tempo during this opening passage, with relatively little shaping from beat to beat and only small variations in the bar tempo. In addition to the red line that indicates the changing tempo from one beat to the next, the overall dynamic intensity of the passage is shown by the green line; although the overall volume of any given passage is affected by the orchestral accompaniment as well as the soloist, this nevertheless gives us a good idea of the manner in which dynamics are being employed through a phrase, especially when the accompanimental texture is sparse.

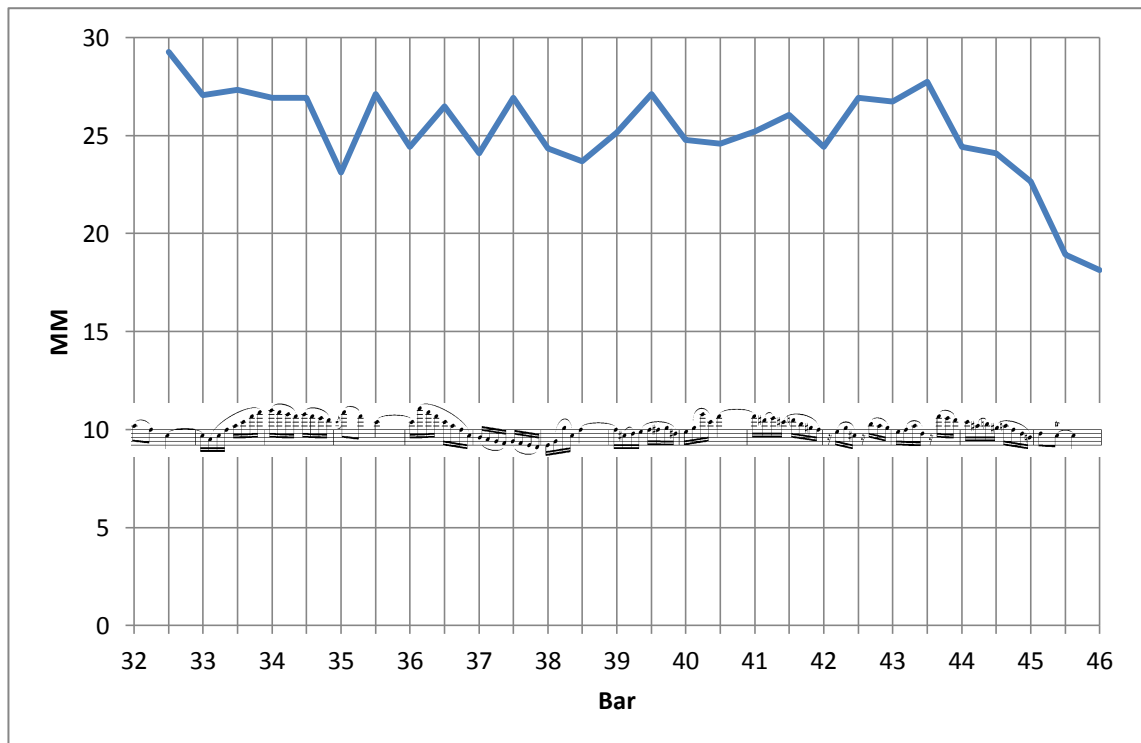


Figure 5.10 Beat data, bb. 32-46, De Vito 1955, Video 1.01.²¹

The most noticeable slowing in De Vito's performance, aside from the obvious *rallantando* from bar 43 onwards, is on the aforementioned second beat of bar 34 at the end of the first phrase unit. In addition, there is a tendency, albeit subtle, to quicken during the first beat of each bar and subsequently slow during the second. This effect is most obvious in bars 35 to 37 and the only exceptions are the first beat of bars 38, 40, 44 and 45, which are slower than the preceding beat. Bars 38 and 40 begin, as shown in Figure 5.9, with the last note of the previous phrase unit, with a corresponding reduction in dynamic intensity on each of these 'ending' semiquavers. Bars 44 and 45 are encompassed within a prolonged *rallentando* at the end of the passage.

²¹ A See appendix B, pp. 284-286 for a list of all the video examples referenced in this chapter.

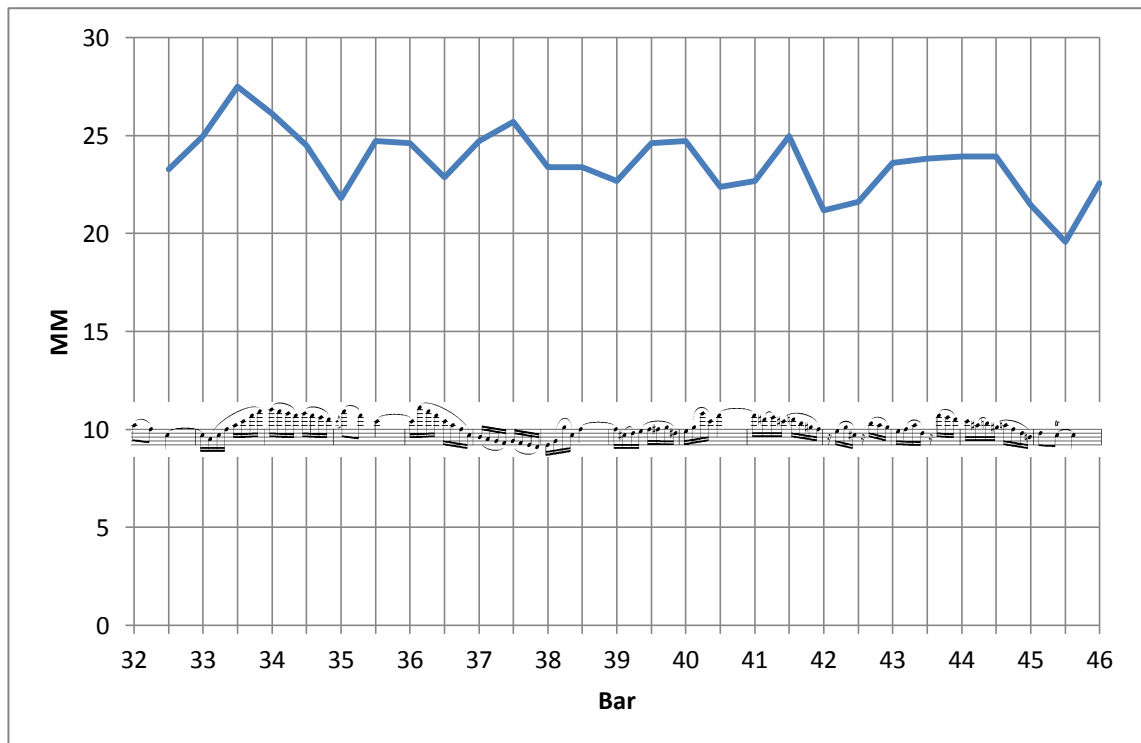


Figure 5.11 Beat data, bb. 32-46, Stern 1973, Video 1.02.

Stern's rendition of the passage also exhibits very subtle *accelerando/rallentando* shaping, although his shapes are slightly longer than De Vito's. Most visible on the graph are the contours of bar 32 to 34 and 42 to 45, both of which represent individual sub-phrase units in our previous analysis.

In stark contrast to these are the most volatile performances, namely those by Francescatti (1958), Milstein (1954), Martzy (1954) and Kulenkampff (1937), which demonstrate far more dramatic fluctuations in the tempo. Of these four artists, Kulenkampff and Milstein are clearest in the manner in which they shape the tempo of the passage.

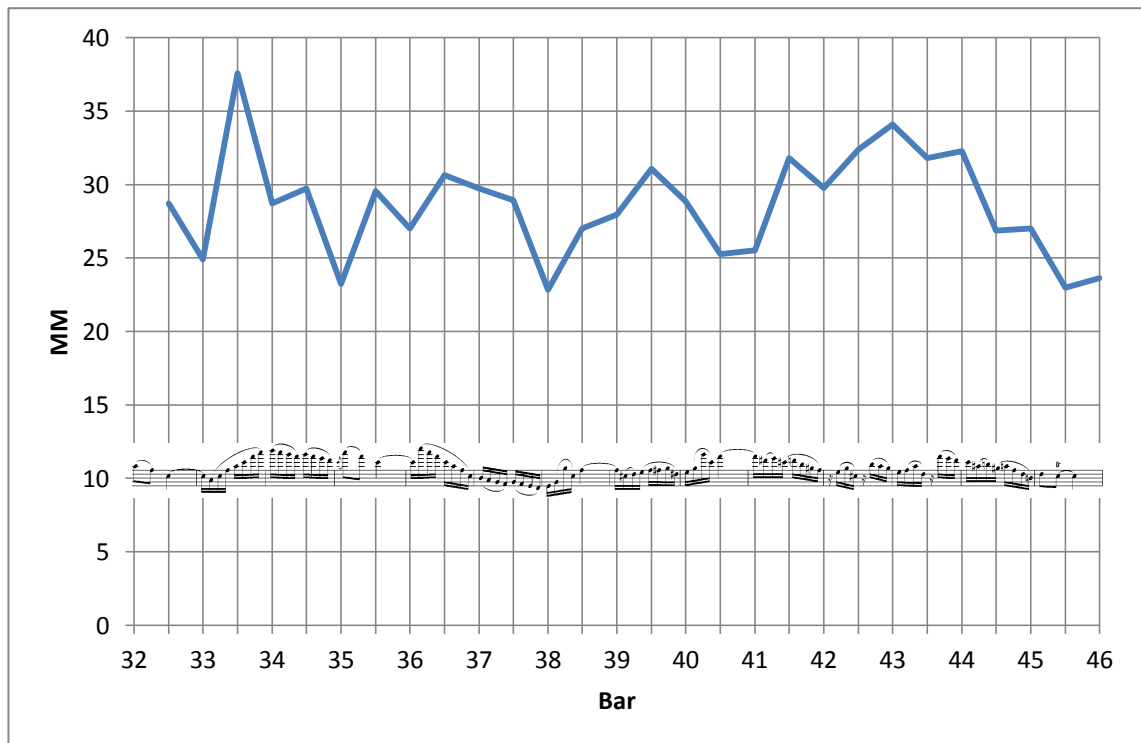


Figure 5.12 Beat data, bb. 32-46, Kulenkampff 1937, Video 1.03.

There are four clear, if slightly irregular, arch-shapes in Kulenkampff's performance of this opening passage, dividing it into a 3+3+3+5 bar structure, with sudden *accelerandi* and *rallentandi* resulting in large variations in the tempo which are reflected by the deep arches on the graph. Whereas the first two of these groups represent sub-phrase units, Kulenkampff's slowing during both beats of bar 40 does not obviously articulate any kind of structural boundary within the phrase. Instead, this 'extra-structural' slowing appears to be purely for expressive reasons, in order to highlight the transposition of bar 38, now moved up an octave, which represents the melodic peak of the second part of the passage. This peak is further highlighted by means of a prominent downwards *B-portamento*.

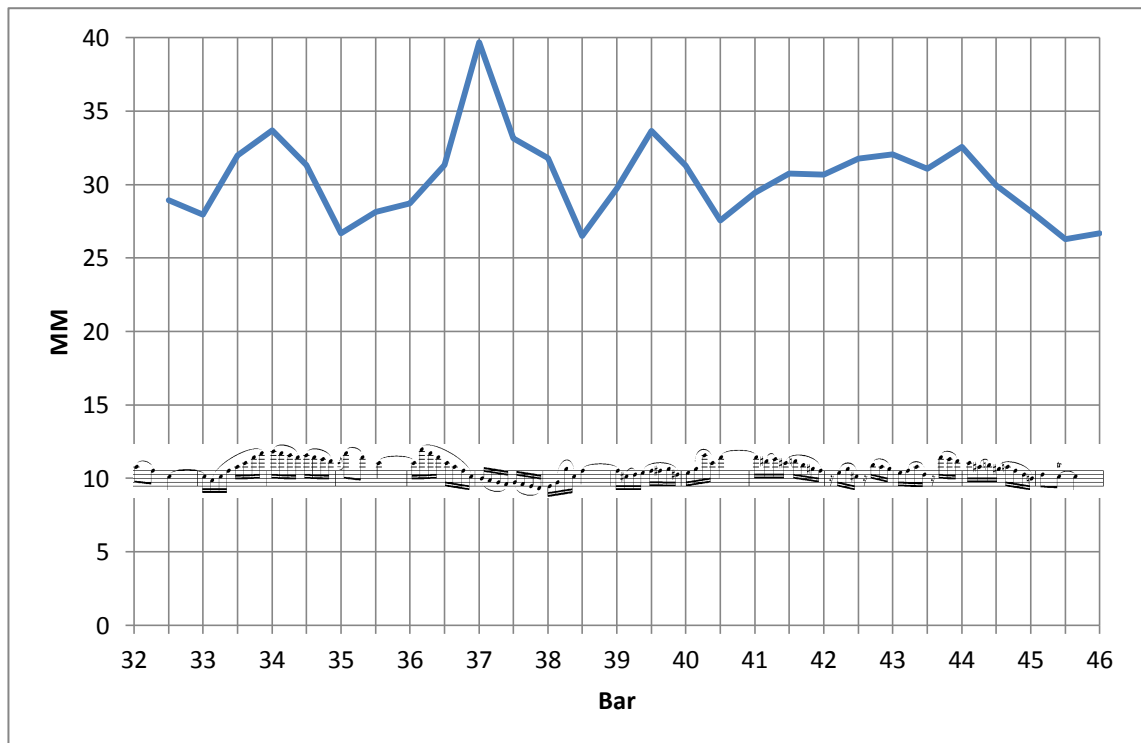


Figure 5.13 Beat data, bb. 32-46, Milstein 1954, Video 1.04.

Milstein uses similarly clear shaping in his 1954 recording, although he divides the passage into four different arch shapes, forming a 4+3+2+5 bar grouping which bears far less resemblance to our 'classical' 3+3+2+2+4 bar model for the section conceived earlier in the chapter. Instead, Milstein appears to be delineating the passage primarily by the kind of note figurations rather than the phrase structure. His arches appear above passages of consecutive semiquavers: bars 33-4, 36-8, 39-40 and 41-4, which are shaped between relatively slower, longer note values in bars 32, 35, 38 and 40, represented by troughs on the graph.

Francescatti and Martzy are less clear with their shaping of the passage as a whole and the extreme changes in speed from one beat to the next do not appear to be for the purposes of structural delineation, at least not at beat-level.

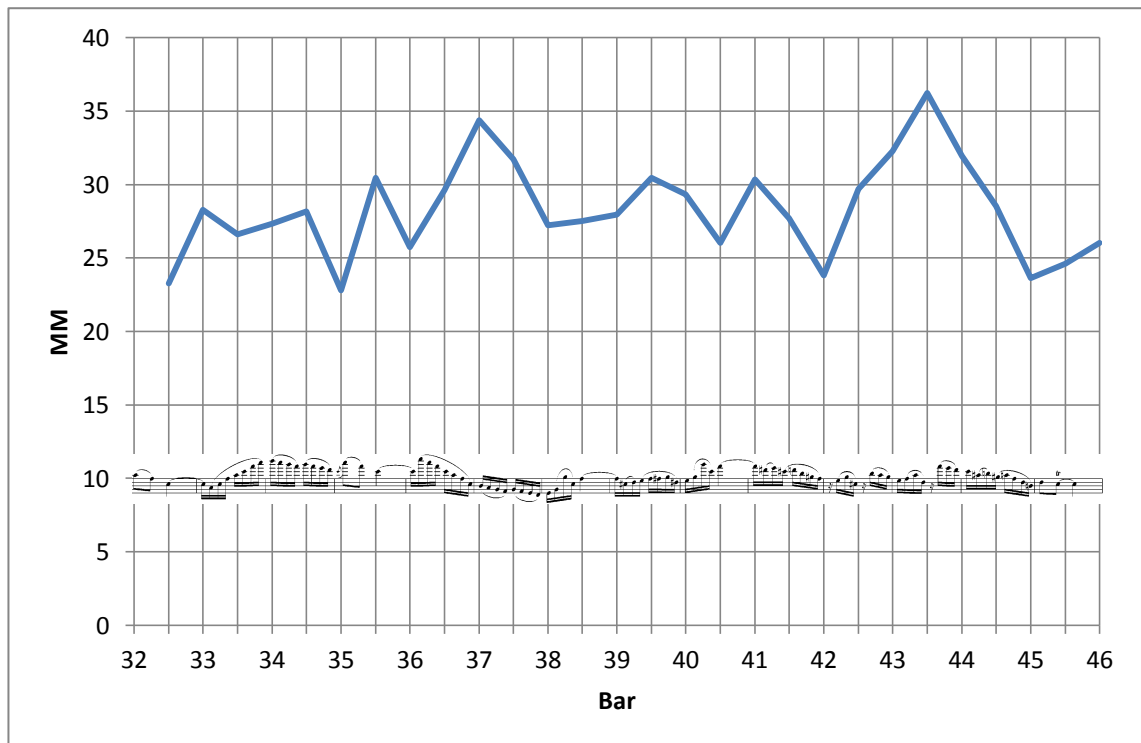


Figure 5.14 Beat data, bb. 32-46, Francescatti 1958, Video 1.05.

With the exception of a steep arch shape over the last four-bar sub-phrase, Francescatti's tempo contour does not correspond directly to the phrase structure of the passage, although there is a lot of *accelerando/rallentando* shaping within individual passages of consecutive semiquavers, as is the case in Milstein's 1954 recording. This is also evident in Martzy's performance of the passage, again with a clear arch shape over the last four bars of the section, which exhibits more-obvious shaping of the groups of consecutive semiquavers.

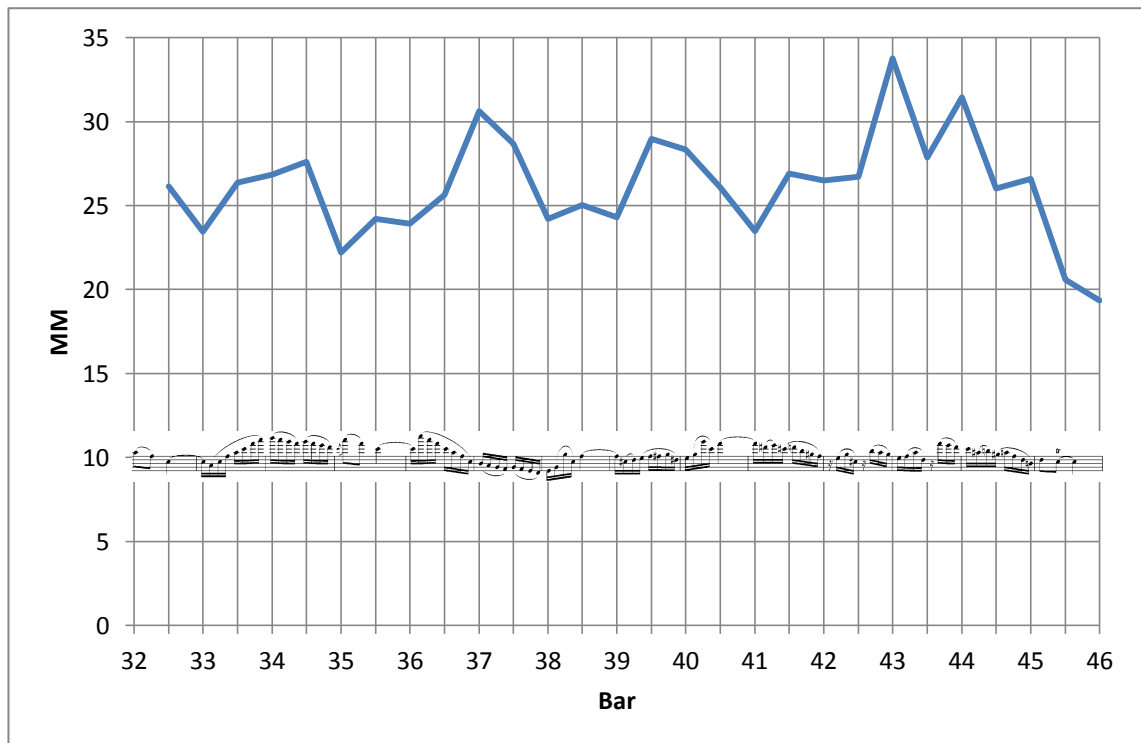


Figure 5.15 Beat data, bb. 32-46, Martzy 1954, Video 1.06.

The performer who most closely adheres to the phrase structure of the section is Kreisler in his 1936 recording, who shapes the section into three very clear arches, outlining a 3+3+8 bar structure. Kreisler does not use rubato to delineate the sub-phrase divisions within the final eight bars of the passage, choosing instead to accelerate slightly through bar 41 in order maintain a sense of momentum.

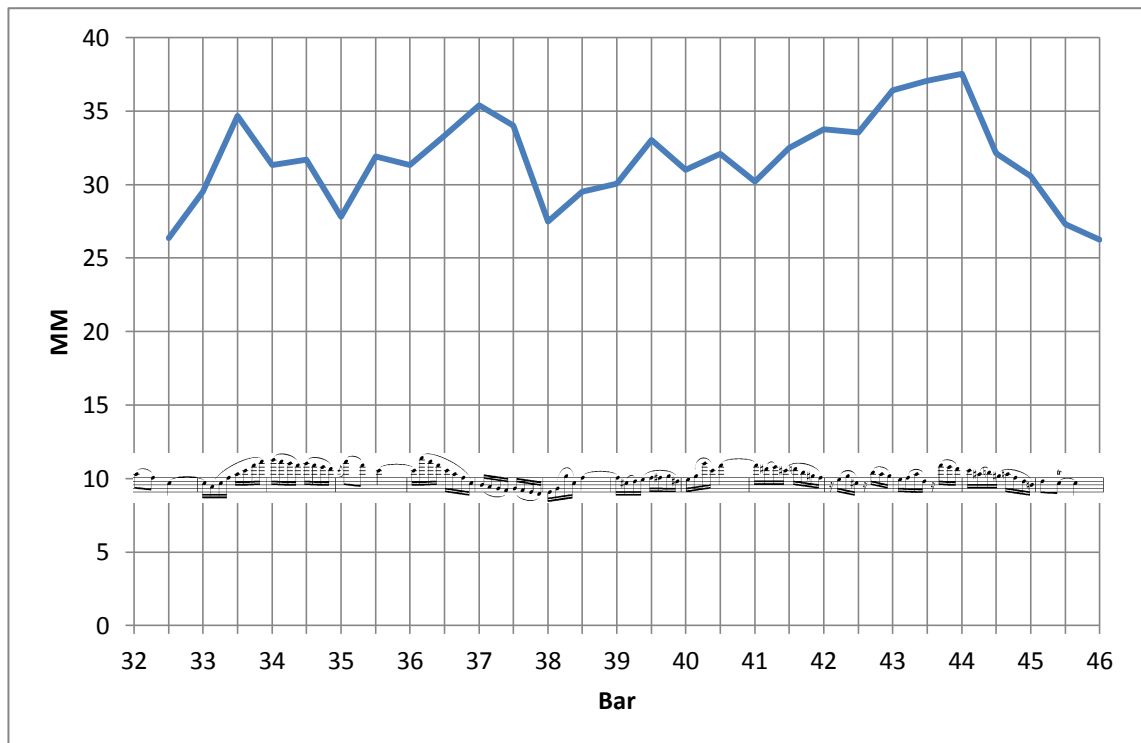


Figure 5.16 Beat data, bb. 32-46, Kreisler 1936, Video 1.07.

Menuhin's 1949 performance is particularly distinctive, in that he plays the entire passage as a single arch shape. The tempo pushes on gradually from the beginning of bar 32 all the way to where the *rallantando* begins in bar 44, with only a slight interruption to the steady increase in tempo at the end of bar 34 where Menuhin eases slightly at the end of the bar before quickly returning to the general tempo. This relatively minimalist approach to rubato in the passage has the effect of drawing even more attention to the climax at the beginning of bar 44 and the subsequent *ritardando*, as the overall sense of momentum is directed almost entirely towards this point in the music.

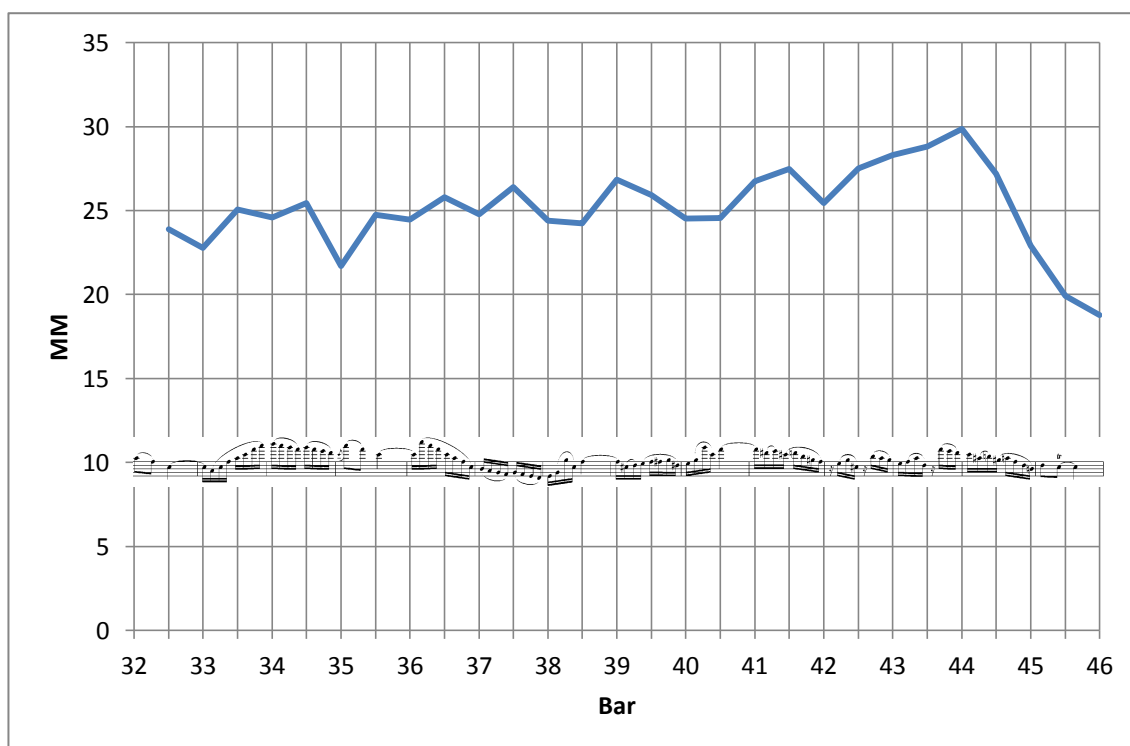


Figure 5.17 Beat data, bb. 32-46, Menuhin 1949, Video 1.08.

It is clear from these tempo graphs that there is much variety in both the degree and manner in which performers use rubato to shape this opening section, ranging from the relatively restrained approaches taken by De Vito, Stern and Menuhin to the more flamboyant interpretations of by Francescatti, Martzy, Milstein and Kulenkampff. The interpreter is faced with a number of choices with regards to how, and indeed if at all, the phrase is to be internally articulated using tempo shaping. Some, like Kreisler and Kulenkampff, adhere fairly closely to the melodic structure of the section as per our initial analysis, whereas others such as Francescatti, Martzy and Milstein seem to be more interested in the shaping of individual note figurations rather than approaching the music from a more analytical perspective. Overall, some degree of organised tempo shaping is evident in all thirty performances, which strongly suggests that such timing patterns are wholly deliberate; Cook, in discussing a similarly ‘organised’ tempo contour, confirms what one might expect, that ‘the smoothness and directed motion

of this underlying durational contour is a clear indication that it is under the performer's control, rather than being the result of random fluctuation.'²²

In addition to these examples of higher-level tempo shaping, rubato is also manifested at lower structural levels in the music, from one note to the next, which has the potential to disrupt the higher-level tempo contour if compensation is not adequately applied. Seemingly 'disorganised' timing profiles at phrase level, therefore, are not necessarily indicative of a lack of structural awareness or even a lack of control; they may also be the result of the performer concentrating their interpretive efforts on lower-level detail.

3.2.2 Agogic accents and small-scale rubato

These beat- and bar-level graphs, particularly when used in conjunction with Sonic Visualiser's real-time display of the music, are effective in demonstrating how performers use rubato to shape whole passages; however, for even more detailed insight into how performers shape the music it is necessary to examine the music in terms of the length of individual notes. In order to display this information graphically for comparison, a MM value is calculated for every note in a passage based on its rhythmic value and subsequent length in performance.²³ Here is a note-by-note graph representing De Vito's performance of the opening section, which was discussed earlier as being one of the most consistent in terms of tempo. The blue line shows the changing MM from note to note whereas the red line shows how it changes from beat.

²² Cook, N. (1987) 'Structure and performance timing in Bach's C major Prelude (WTC1): an empirical study', p. 269.

²³ See chapter 2, pp. 100-101.

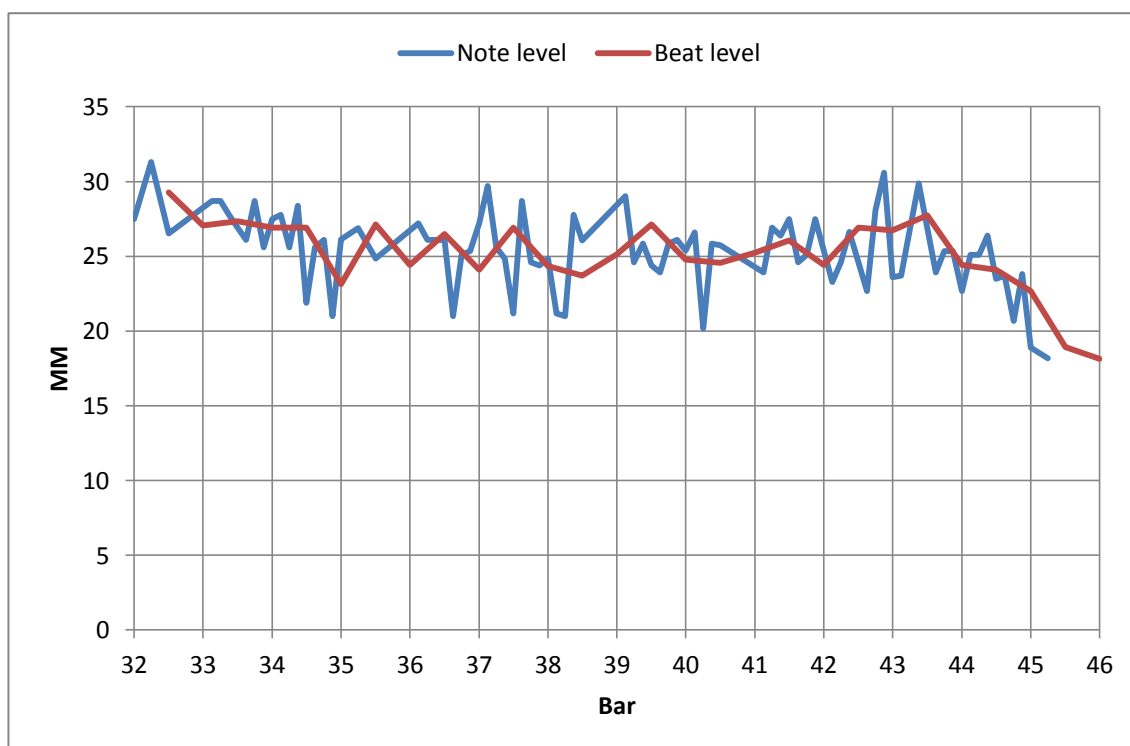


Figure 5.18 Note and beat data, bb. 32-46, De Vito 1955, Video 1.01.²⁴

As one might expect, there is even more variation in tempo when examining the performance at a note-by-note level. A lot of extra detail is apparent which is not reflected by the beat-level line and the contours of both lines do not always correspond, suggesting that rubato is being used on a smaller scale for reasons other than articulation of the overall phrase structure. The downward spikes in the note-level line represent individual notes which have been lengthened in the manner of an agogic accent, defined by Riemann as a note which is lengthened in order to give it added accentuation, without necessarily increasing its volume.²⁵ A number of these downward spikes are immediately preceded or followed by a corresponding upward spike in the graph, showing that some degree of compensation is being applied in order to maintain the general tempo whilst allowing more time for these longer notes. Here is a score of the same passage, with the most-noticeably lengthened notes appearing in red:

²⁴ As mentioned previously, it was unfortunately not possible to display graphs in Sonic Visualiser in the case of passages containing unequal note values. See chapter 2, p. 101.

²⁵ See chapter 1, p. 54.



Figure 5.19 Placement of agogic accents, bb. 32-46, De Vito 1955.

A certain degree of subjectivity is inevitable when determining what is classed as an agogic accent and the above analysis represents this author's own interpretation of the graph. The inclusion of the lengthened A in bar 36 is slightly contentious; although it is considerably longer than its neighbouring notes, it is perhaps more plausible, given the relative 'inexpressiveness' of the note, that De Vito takes slightly longer than intended to cross over onto the A-string. Alternatively, it may be that the lengthening is wholly deliberate and is intended to highlight the change of tone colour afforded by crossing strings. Indeed, context is of the utmost importance when locating agogic accents, in that what is deemed a lengthened note in one passage may not be elsewhere. The chief determining factor used herein is therefore an abrupt increase in length of at least 25% when compared to the preceding note, which is the case in all of the above instances. The complexity of timing in these performances and the resulting graphs mean that there is a large 'grey area', populated by notes which are longer than the surrounding ones, but not to a great enough extent to constitute agogic accents in the context of the entire section, such as the first semiquaver in bar 44 of De Vito's performance.

De Vito's agogic accents in the opening entry are fairly typical in that they appear predominantly on isolated notes, although there are two cases of adjacent elongated notes. The placement of these agogic accents, and indeed the vast majority of those

examined in this study, can be divided roughly into one or more of the following categories according to their musical context:

1. Harmonic change

e.g. bars 34 and 37 where the harmony changes on the second beat of the bar.

2. Melodic peaks

e.g. bars 38 and 40 which contain rising octaves within the melody line.

3. Particularly expressive notes

e.g. bar 39 where the chromatic appoggiatura C-sharp is resolved upwards to a lengthened D, and bar 43 where the E clashes with the accompanying D minor chord on the strong first beat of the bar.

In addition to the above three categories, a fourth kind of lengthening can also occur, whereby a note is held onto in the manner of a slight pause before the following note is played. This last kind of lengthening tends to occur at the end of a phrase unit and differs from the other aforementioned categories in that the effect of the lengthening is not really one of agogic accentuation, as per Riemann's definition, but rather of punctuation; the accentuation is instead felt on the note that directly follows, as a result of tension being created by the note being delayed. Specific examples of this kind of 'non-agogic' lengthening will be examined later.

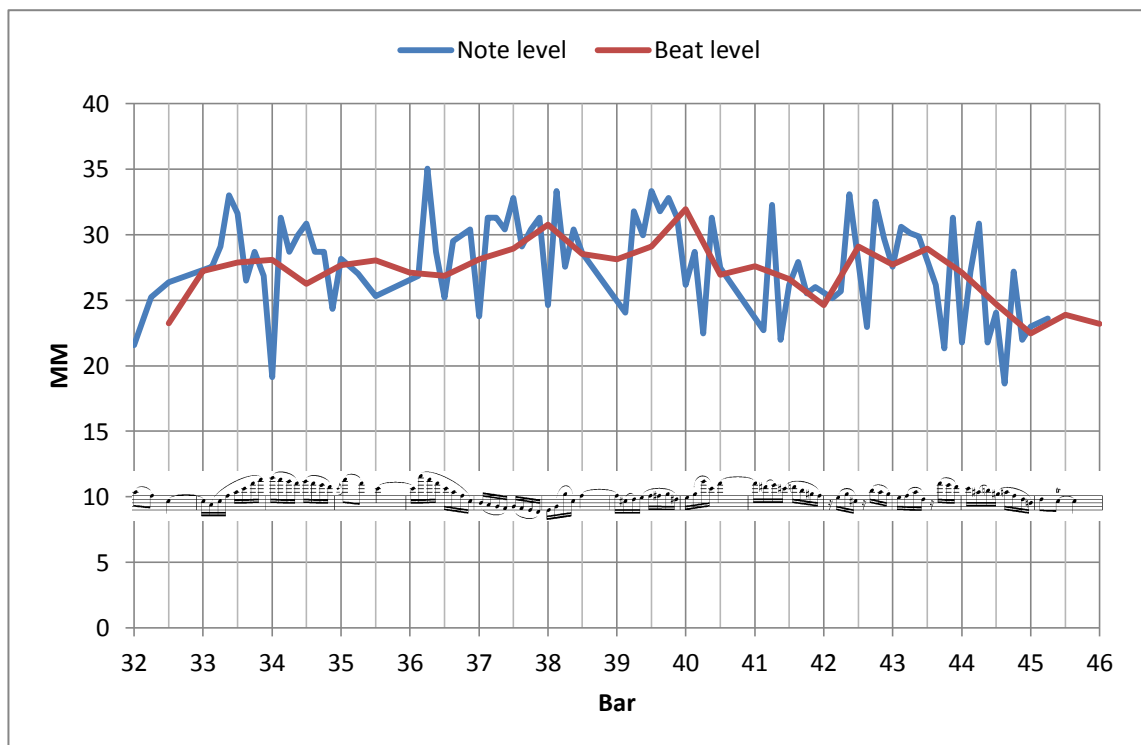


Figure 5.20 Note and beat data, bb. 32-46, Heifetz 1939, Video 1.09.



Figure 5.21 Placement of agogic accents, bb. 32-46, Heifetz 1939.

In order to help illustrate the wide variety of approaches with regards to the placement of agogic accents we will now examine Heifetz's 1939 performance of the same section, shown in Figure 5.20, in which there are both similarities and differences in his use of agogic accents when compared to De Vito. Firstly, Heifetz tends not to articulate changes of harmony, aside from the agogic accent on the first beat of bar 44

which is more notable for being the dynamic and structural climax of the opening section than it is for the underlying change in harmony. Melodic peaks are highlighted; most prominently in bars 34 and 40 where the lengthened notes are further accentuated by a particularly intense *vibrato*. The B-flat at the beginning of bar 34 has even more expressive value in that it clashes with the underlying F major chord and Heifetz also utilises agogic lengthening at the corresponding point in bar 37, albeit now in a lower register of the instrument. Other particularly expressive chromatic notes are given added length in bar 39 (C-sharp), bar 41 (D-sharp and C-sharp) and bar 44 (G-sharp). In all four of these cases it is the dissonance which is highlighted rather than the subsequent resolution, in contrast to De Vito's agogic accent in bar 39. In addition to the climax at the first beat of bar 44, Heifetz uses agogics to punctuate the phrase structure in bar 36 (dividing the semiquavers by lengthening the C on the second beat) and bar 38 (lengthening the E which marks the end of a sub-phrase). The agogic accent on the E in bar 43 seems somewhat arbitrary considering that it is part of a downward scale gravitating towards the following bar and has no expressive importance of its own, although Heifetz chooses to treat it in the manner of an accented passing note. Like the lengthening of the C midway through the semiquaver passage in bar 36 which is similarly of little importance in its musical context, this addition of rubato is very much 'extra-notational', in that it is neither indicated in the score by the composer, nor is it bringing out an obvious expressive feature inherent in the music. The final lengthening of the F in bar 44 highlights a downward single-finger *portamento* to the following D.

All thirty performances exhibit at least some use of agogic accents in the opening section and, although each player uses the expressive lengthening of notes to a different extent, clear patterns emerge in terms of their location when all of the recordings are compared. The most common location for an agogic accent in this opening passage is on the down-beat of bar 44, C, which represents the dynamic and structural climax of the section. Some form of agogic lengthening of this note is evident in almost all of the recordings, with the exception of Stern and Szigeti's, and a more-substantial lengthening can be heard in no fewer than 17 recordings.

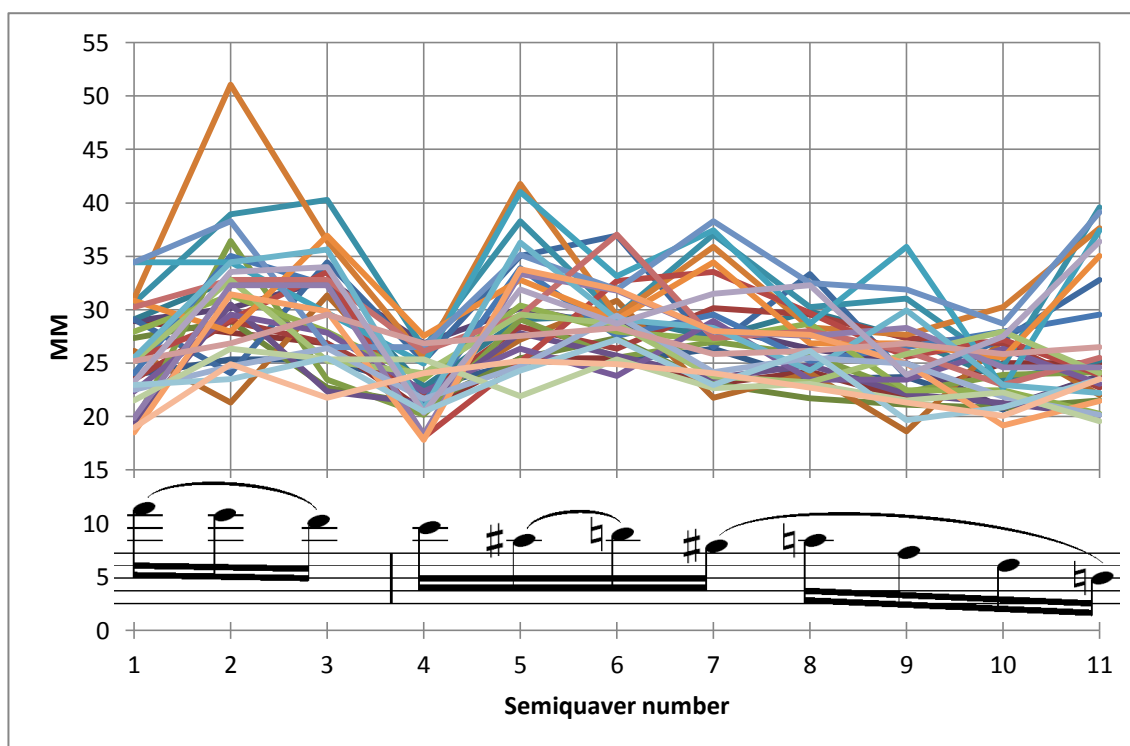


Figure 5.22 Semiquaver data, bb. 43,2-44, all performances.

The above graph shows the manner in which all thirty performers play the final passage of semiquavers, beginning with the three up-beat notes at the end of bar 43. The examination of passages that contain uniform note durations can be particularly illuminating when examining timing, in that any shaping of time is more likely to serve some kind of structural imperative; according to Clarke, in reference to Bach's C major prelude, 'the very regularity of the surface structure provides a context in which performers may display structure-based performance differentiation particularly clearly.'²⁶ The tendency to lengthen the fourth note which represents the C down-beat of bar 44 is plain to see, as is some degree of compensation by shortening the following note; however, no two performers execute this feature in quite the same way, with much variation in both the degree of lengthening and the manner in which the effect is prepared. All of these minutiae contribute to the audible effect of the

²⁶ Clarke, E (1984) 'Structure and expression in the rhythm of piano performance', p. 53. Cited in Cook, N. (1987) *Op. cit.*, p. 258.

agogic accent and we will now examine a number of individual contrasting examples in order to illustrate some of the myriad approaches that players take.

Kreisler's 1936 performance stands out from the others by way of an unusually short second semiquaver. The following notes then become progressively longer, which increases the sense of arrival on the main accented C on the down-beat.

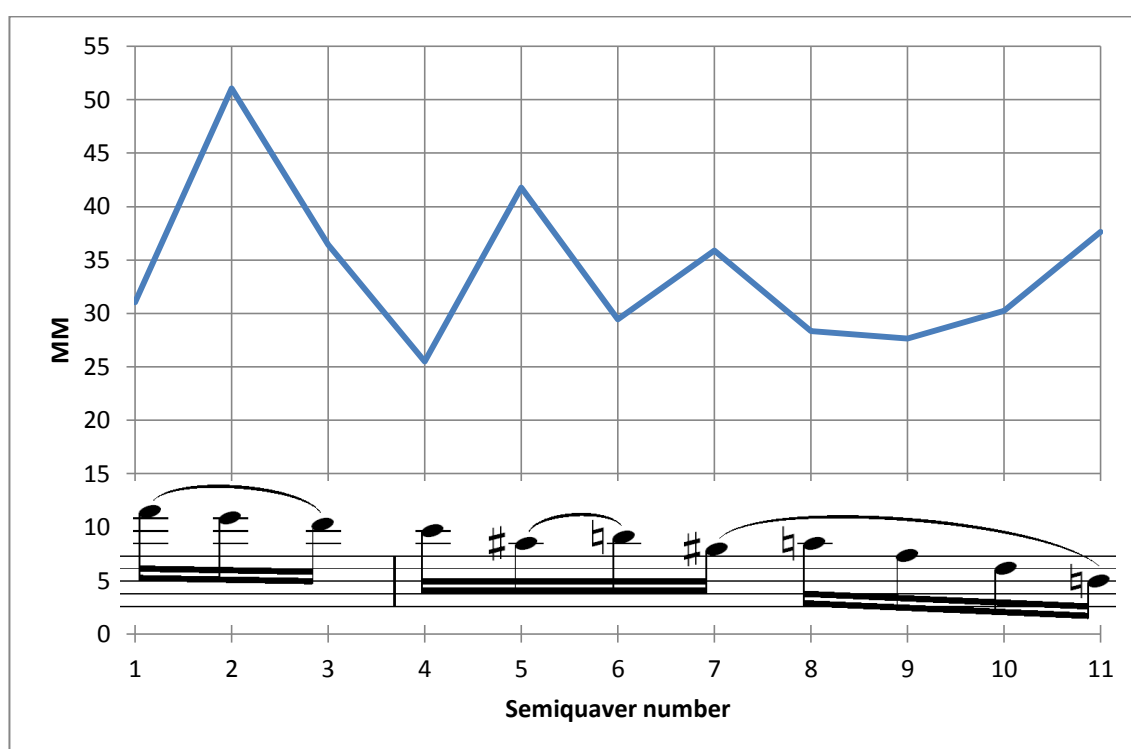


Figure 5.23 Semiquaver data, bb. 43,2-44, Kreisler 1936, Video 1.10.

By playing the second semiquaver extremely quickly, Kreisler is effectively preparing the agogic accent by allowing space for the slowing on semiquavers 3 and 4. Kreisler is not the only performer to do this, although he certainly does it to the greatest extent; such extreme alteration of note lengths within a single figure may well reflect the fact that, born in 1875, Kreisler is the earliest violinist examined in this study and therefore

the most likely to exhibit nineteenth-century performance traits. Similar shaping leading into the fourth semiquaver is also evident in some of the other recordings, including Kogan's two performances which date from 1953 and 1958 respectively, although the effect here is less pronounced:

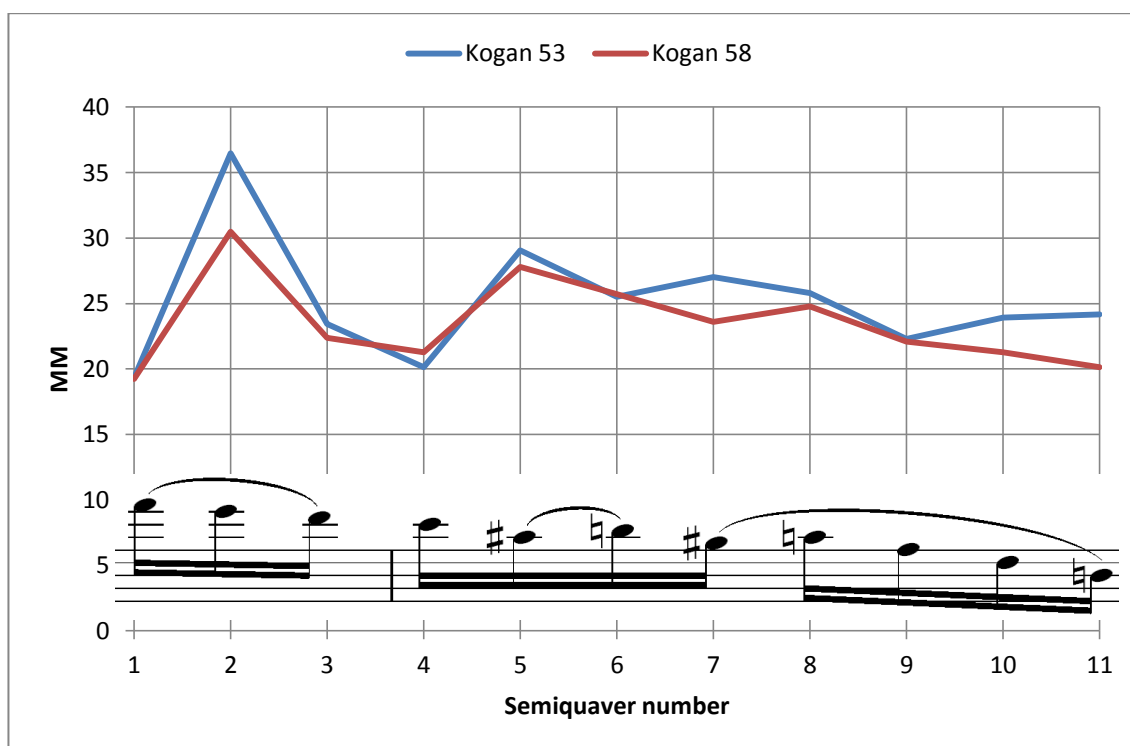


Figure 5.24 Semiquaver data, bb. 43,2-44, Kogan 1953 and 1958, Video 1.11.

Both of Kogan's interpretations, in particular the earlier of the two which is included on the video example, differ from Kreisler's in that he slows more quickly on the third semiquaver which results in a paired agogic accent, adding emphasis to both the C and the preceding D which are of similar length. In contrast to this, a number of performers wait until the fourth semiquaver before slowing at all, thus isolating the agogic accent and making its effect more sudden and, therefore, obvious.

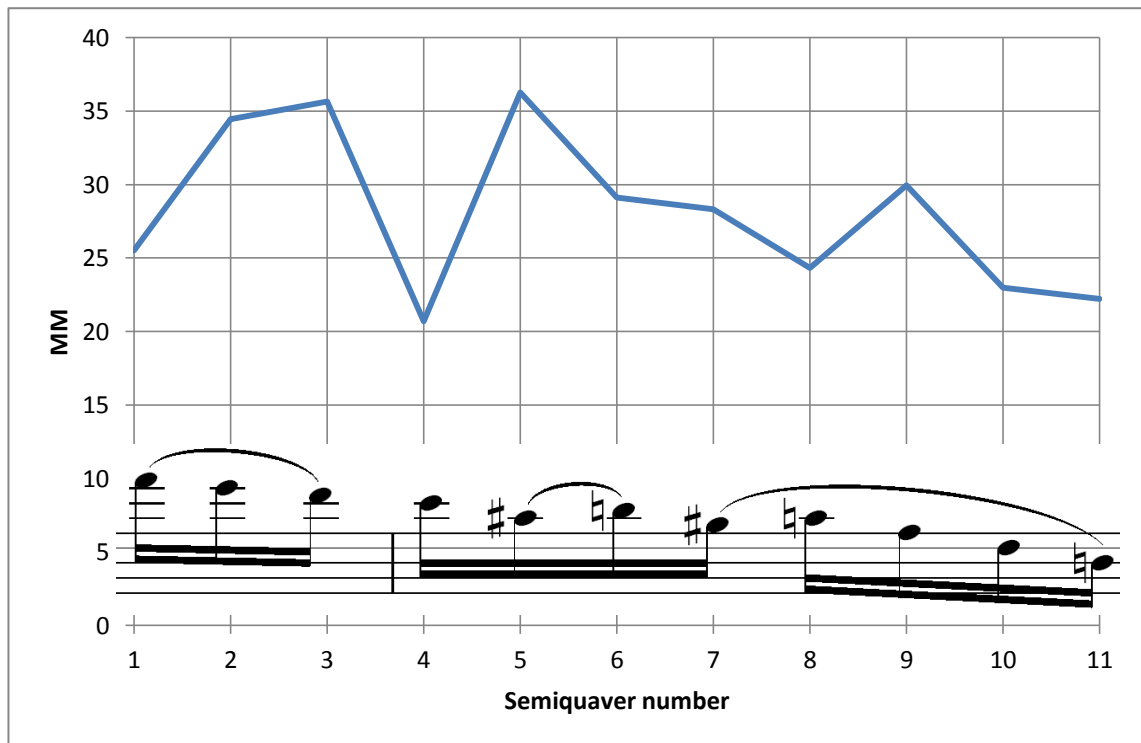


Figure 5.25 Semiquaver data, bb. 43,2-44, Oistrakh 1961, Video 1.12.

Oistrakh does this in the latter three of his four recordings, the above graph being taken from his 1961 performance. Oistrakh accelerates into a large agogic accent on the C before immediately returning to the quicker tempo on the following note. Although agogic accents often exist as isolated longer notes such as in the above example, the influence of the accent frequently extends to notes that surround the 'centre of gravity', as demonstrated in the following examples.

The first group of semiquavers in bars 33 to 34 consists of an upwards arpeggio during the first bar, followed by two downward scale figures, each lasting for a beat. The peaks of these two scale figures – B-flat and G – are 'agogic hotspots', with many performers adding agogic accents to either one or both of them.

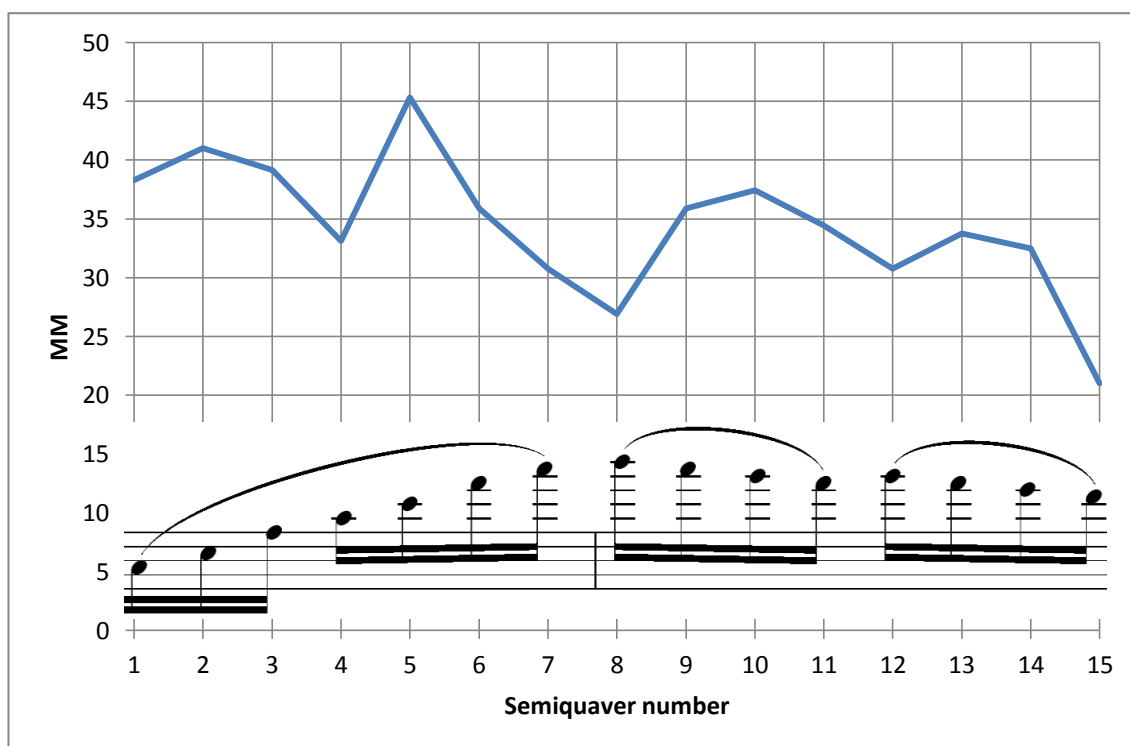


Figure 5.26 Semiquaver data, bb. 33-34, Milstein 1950, Video 1.13.

In this passage Milstein suddenly quickens the fifth semiquaver before slowing into the agogic on the downbeat B-flat, which is represented by the eighth note on the graph, in a similar manner to Kreisler's agogic on the downbeat of bar 44. Milstein's shaping of this passage creates two further 'lesser' centres of gravity, on the fourth and twelfth semiquavers; what one might term 'minor' agogic accents. Although the fourth semiquaver, A, is of little musical significance, the slight lengthening draws attention to a slow *portamento* mid-way through the arpeggio. Riemann's gravitational analogy can be taken a stage further with this kind of agogic shaping, in that the more important the note in the interpretation, the greater its impact on the surrounding tempo contour of the music.

The kind of arched shaping of phrases that results from *accelerando*/*rallentando* shading, examined earlier at beat level, can also occur at note level as is demonstrated by Francescatti's 1958 interpretation of the same semiquaver passage:

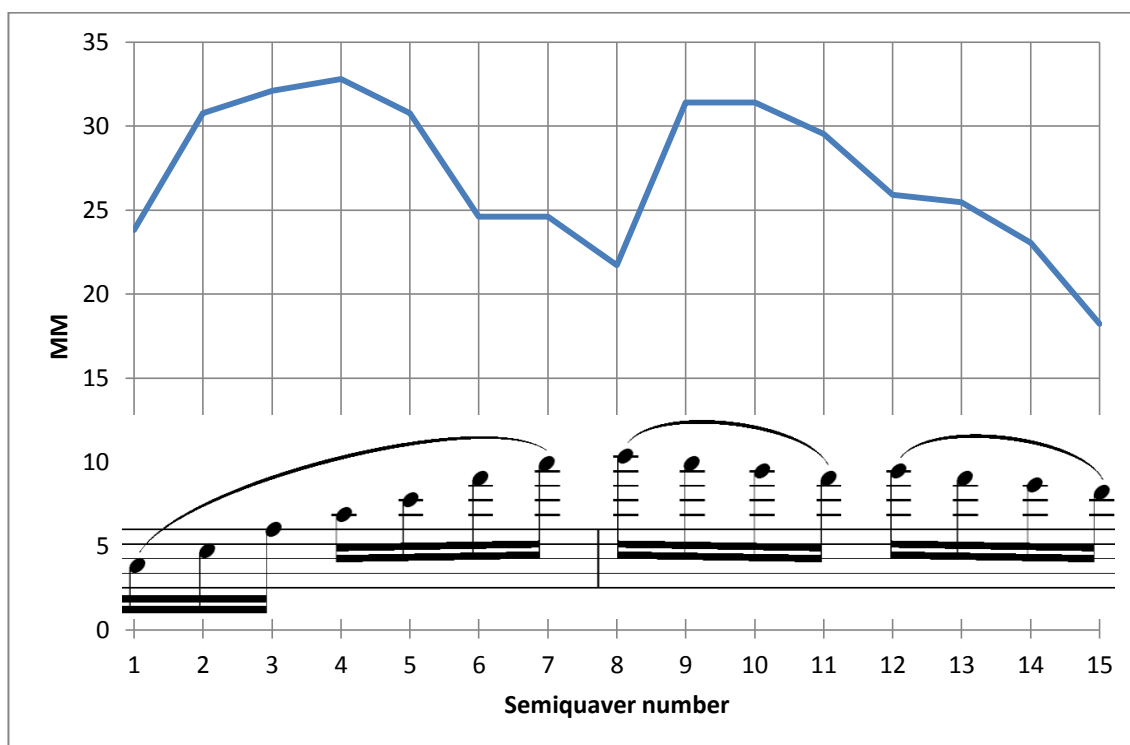


Figure 5.27 Semiquaver data, bb. 33-34, Francescatti 1958, Video 1.14.

Francescatti, whose beat-level graph appeared to show less overall structure in his use of tempo-shaping, is one of seven performers who shape these bars of semiquavers with their own microcosmic arches, gravitating towards the B-flat peak at the beginning of bar 34. In cases such as this, although the focus of the agogic accent is clearly the B-flat peak, the shaping of the entire passage contributes to the overall effect of the accent and it is therefore more useful to think of the effect in terms of 'agogic shaping' rather than an individual accented note.

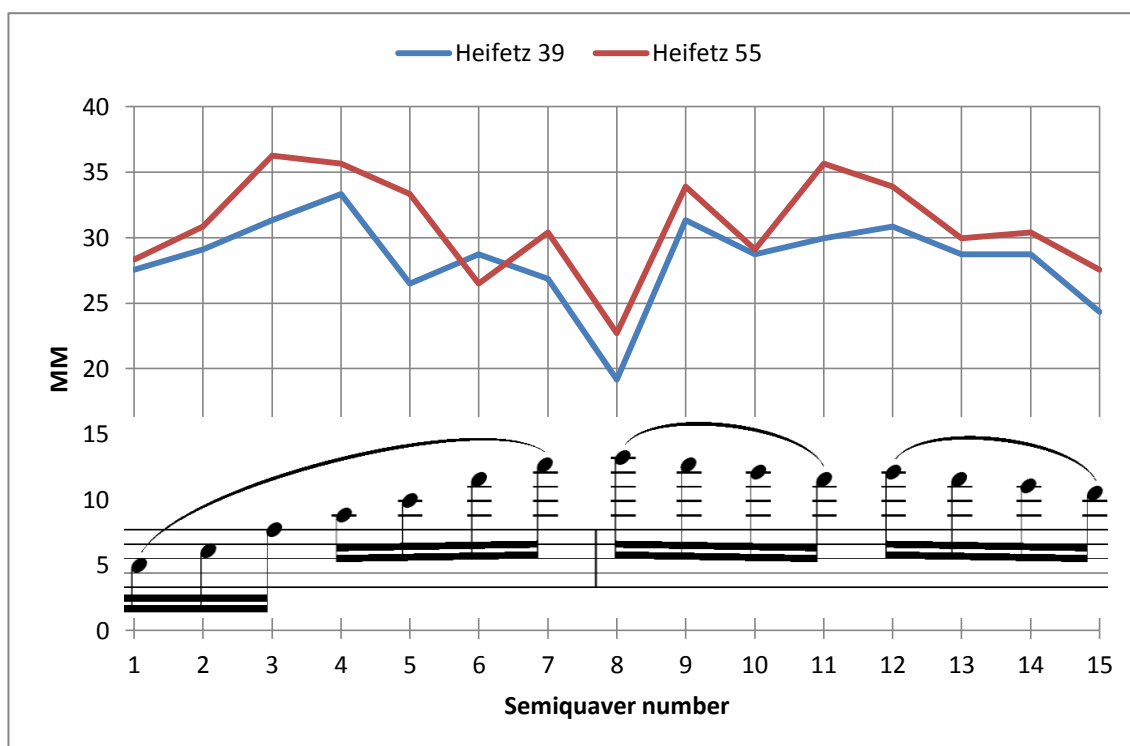


Fig 5.28 Semiquaver data, bb. 33-34, Heifetz 1939 and 1955, Video 1.15.

Heifetz can be seen to incorporate both the ‘isolated’ and ‘shaped’ approaches in his interpretation; there is a sudden lengthening of the B-flat in the context of general arched-shaping to each bar of semiquavers. Isolated agogic accents are also utilised at melodic peaks elsewhere, on the third semiquaver of bars 38 and 40 following octave leaps. His 1939 rendition can be heard on the video accompanying the above graph.

To summarise this initial section, although beat-level analysis can tell us a lot about how performers use musical timing to shape larger sections or phrases, in order to examine the minutiae of rubato, such as agogic accents, small-scale shaping of note figurations and other kinds of rhythmic alteration including delays or anticipations, it is far more illuminating to examine the music on a note-by-note basis. Contextualisation is vital in determining the location of these small-scale expressive devices, as it is the relative degree of alteration from one note to the next that determines the audible

effect on the listener. Categories have been defined as to the location and consequent function of individual note lengthenings, consisting of notes that mark a harmonic change, melodic peaks, notes with a particularly expressive content such as appoggiaturas or chromatic passing notes, and also phrase or sub-phrase delineation. A number of analytical choices present themselves to performers when it comes to the structural shaping of this first section as a whole and the scope for interpretive freedom is increased to a far greater degree when it comes to making decisions over the length of individual notes and shorter figurations, resulting in far more disparity between the tempo graphs of performances on a note-to-note level. This makes note-level comparison between multiple performers of this particular section rather futile, although it is possible to ascertain common locations for the use of smaller-scale rubato, as well as examining individual instances of rubato in detail to see how it is used to highlight a variety of musical elements for the listener.

3.3 Bars 48 to 49

In contrast to the lyricism and melodic expansiveness of the opening entry, the short two-bar solo passages that follow are far more rhythmically and melodically complex, containing a wide array of quicker note figurations including triplets, demisemiquavers and quintuplets. This complexity, in combination with the relative simplicity of the orchestral accompaniment, lends these entries something of a recitative-like feel. In keeping with this speech-like, declamatory style of singing, players appear generally to be more concerned with bringing out internal expressive features within the line rather than macrocosmic shaping of the two-bar passage as a whole. Placement of agogic accents varies greatly in bar 49, although they are most commonly located on the first and second crotchet beats of the bar.

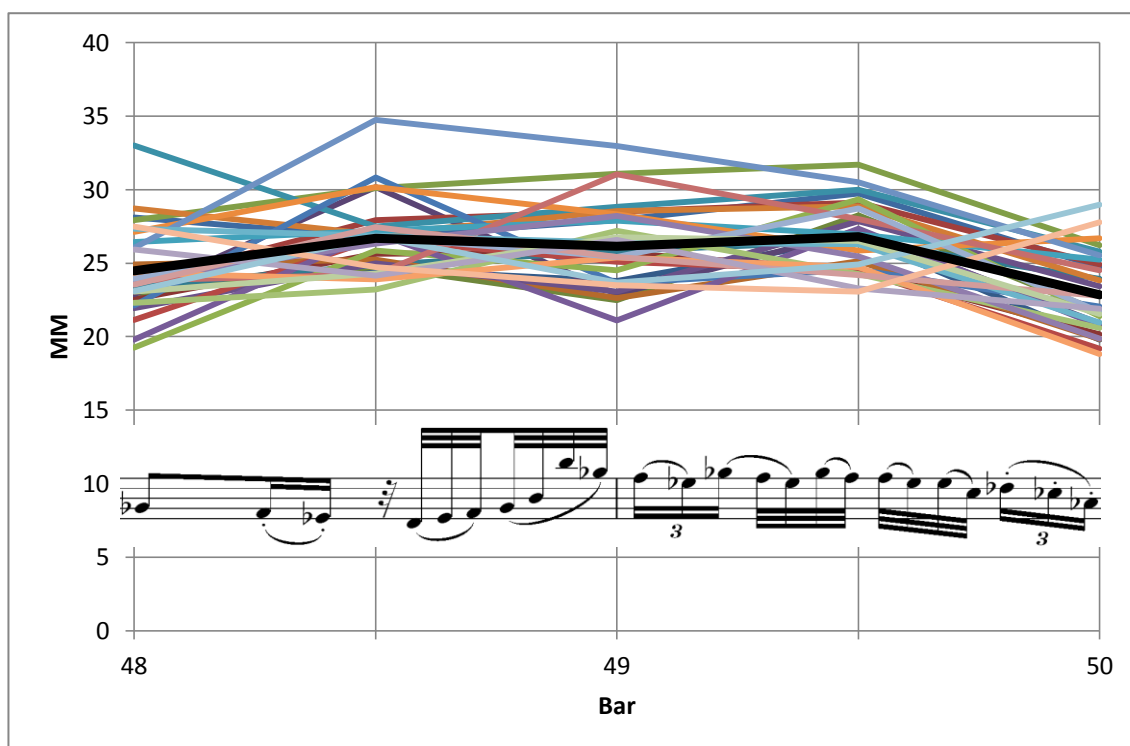


Figure 5.29 Beat data, bb. 48-49, all performances.

As can be seen from the above graph, performers' approaches to the section vary a great deal at beat-level, although there is a clear tendency to ease the tempo on the second beat of bar 49, as might be expected at the end of a phrase. The only exceptions to this are Szigeti's two recordings where he speeds up towards the end of the phrase, thus maintaining momentum into the following tutti. A number of players, including Kreisler, Neveu, Oistrakh and Szeryng, play the first quaver beat of bar 48 relatively broadly, before speeding up during the following demisemiquaver figure. The three 'sul G' notes at the beginning of the bar represent the first time the solo violin has played in this register during the movement and a slight broadening of tempo allows a little more time to introduce this new, richer sonority, as well with establishing the new G-flat major tonality.

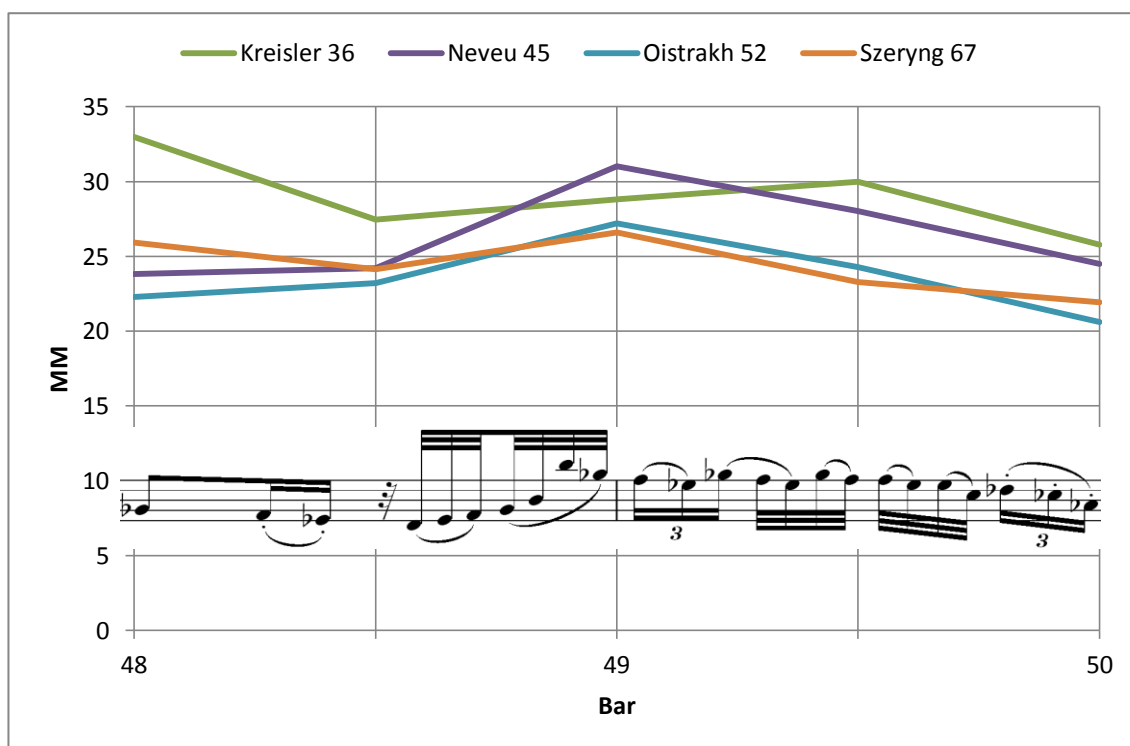


Figure 5.30 Beat data, bb. 48-49, selected performances, Video 2.01

Many players shape these quick note figurations around *portamenti* and agogic accents and, although the manner in which the music is shaped from note to note differs wildly between performances, there are a number of ‘hot-spots’ which form centres of gravity in many performances. The octave interval between B-flats at the end of bar 48 presents a particularly inviting opportunity for *portamento* and almost all performers perform this shift ‘sul A’ in order to maintain a consistent tone colour, rather than crossing over to play the upper B-flat on the brighter E-string. This is a relatively wide shift which does take a certain amount of time to physically accomplish, particularly in its demisemiquaver context; however, it is clear in many performances that utilise slower *portamento* that extra time is taken not as a necessary evil, rather, conversely, to draw even more attention to the expressive shift.

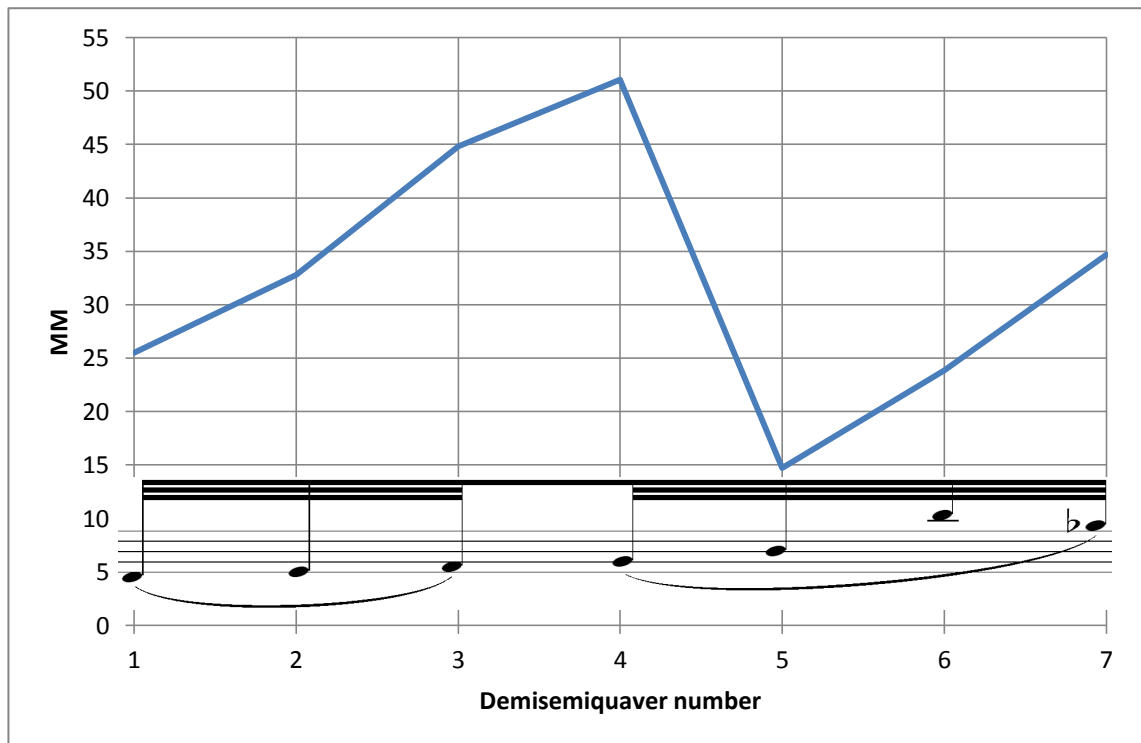


Figure 5.31 Demisemiquaver data, b. 48,2, Kreisler 1927, Video 2.02.

Kreisler creates a particularly whimsical feel in this section by freely varying his note lengths. This graph represents the MM values for each of the seven demisemiquavers during the second beat of bar 48 in his 1927 recording, showing a regular acceleration both towards and away from the fifth note which is suddenly lengthened dramatically, to the extent that it is almost three times the length of the preceding note. This draws a lot of attention to a slow and an unhurried *B-portamento* spanning the octave that comprises roughly half of the note's overall duration.

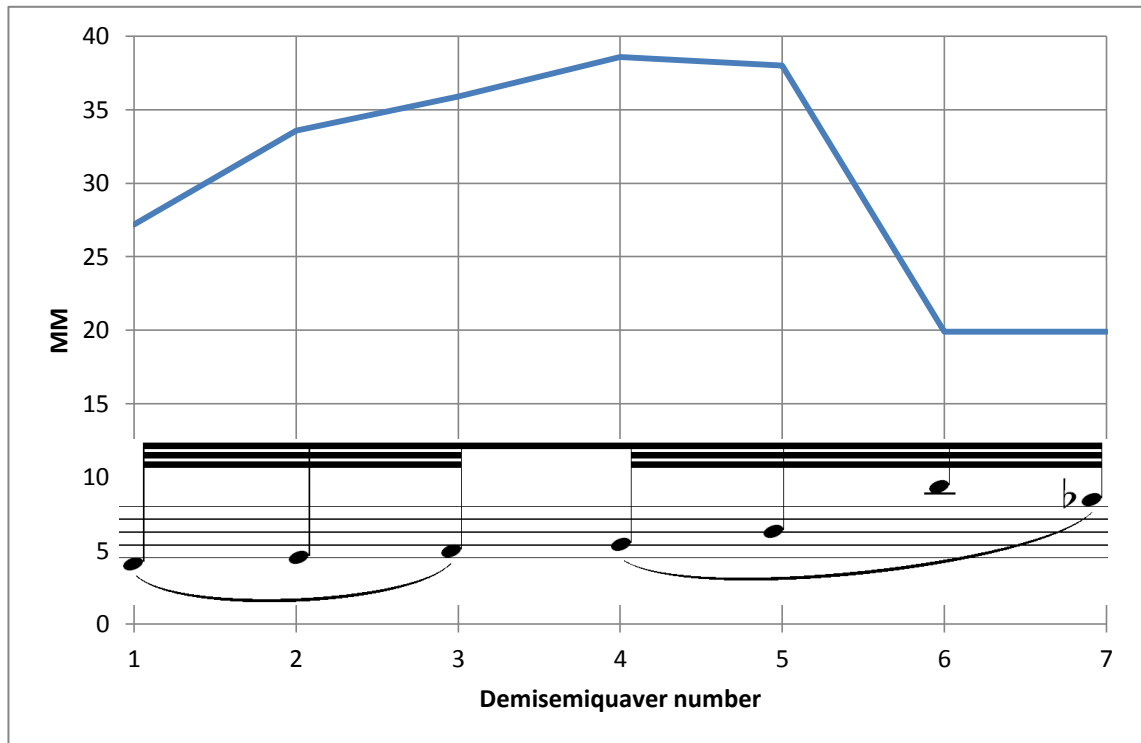


Figure 5.32 Demisemiquaver data, b. 48,2, Huberman 1944, Video 2.03.

Huberman also shapes his demisemiquavers around a *portamento*, although his comes a note later, in the form of a slow single-finger slide from the top B down to the following G-flat. Huberman does not accelerate into the shift to the same degree as Kreisler, but the final two notes in the bar that contain the *portamento* are almost twice the length of the notes that precede them. This suggests a potentially significant divergence of approach between Kreisler and Huberman; whereas Kreisler ‘compensates’ for the lengthened notes by speeding up others, in order to maintain the overall tempo, Huberman instead ‘stretches’ the overall time.

Heifetz employs a large amount of flexibility in his two renditions of the same demisemiquavers, although his focal point is an agogic accent on the G-flat rather than the relatively subtle *portamento* up to the following B-flat.

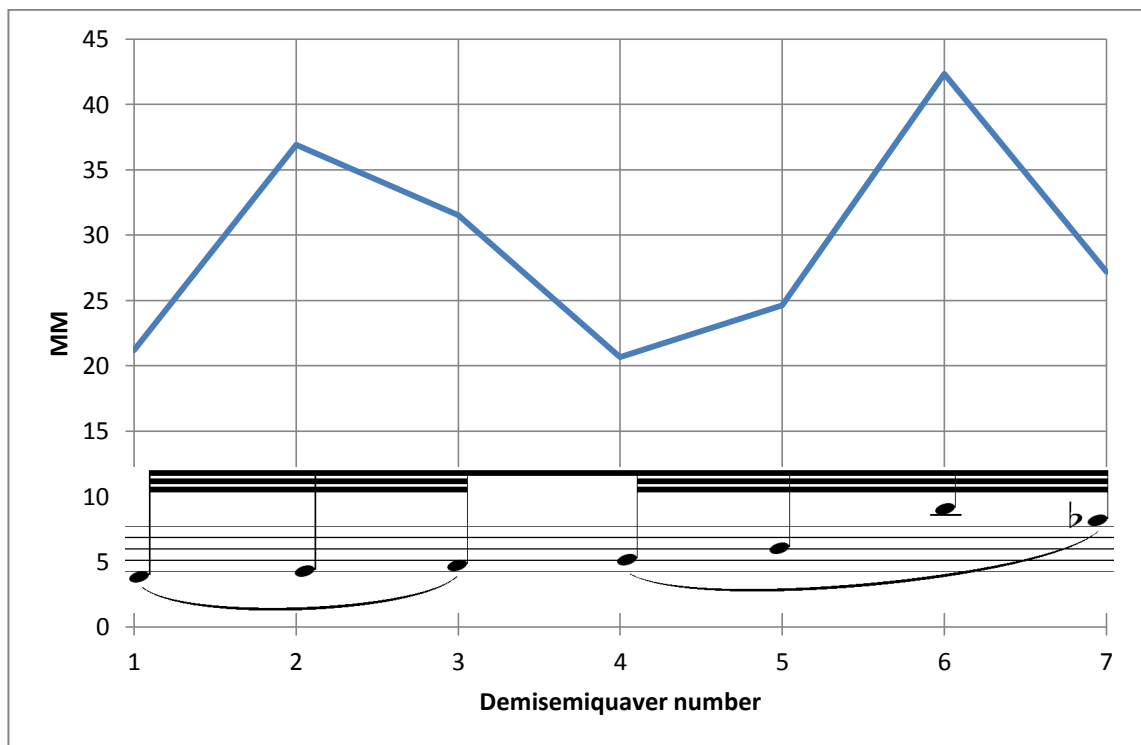


Figure 5.33 Demisemiquaver data, b. 48,2, Heifetz 1955, Video 2.04.

Heifetz is one of a handful of players to both anticipate and lengthen the initial D-natural following the rest, sounding the note almost immediately after the orchestra's change of note on the second beat of the bar, and then speeding up the following two demisemiquavers to compensate. Martzy and Menuhin also make use of this effect, with Menuhin particularly lengthening the D-natural, although his anticipation is not as marked as Heifetz's.

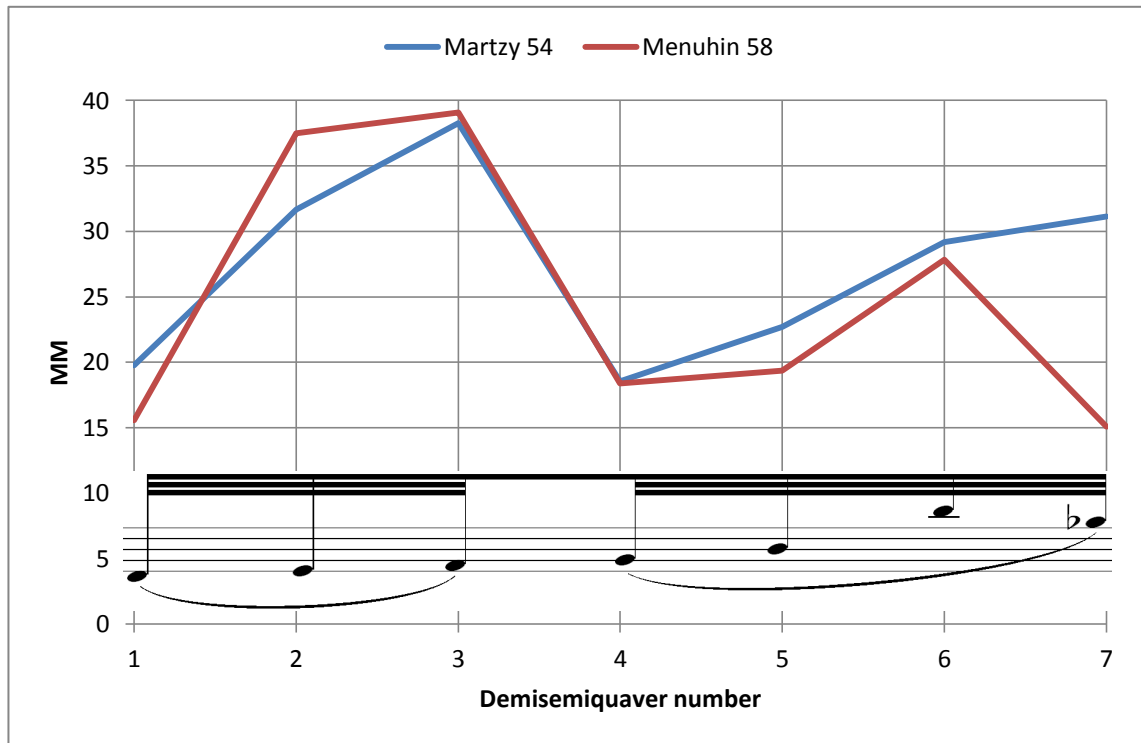


Figure 5.34 Demisemiquaver data, b. 48,2, selected performances, Video 2.05.

Menuhin also lengthens the final demisemiquaver in the bar, delaying the onset of the following downbeat and also drawing attention to a subtle single-finger slide just before his change of bow.

Many performers lengthen the F downbeat of bar 49 in the manner of an agogic accent, such as in Oistrakh's 1961 recording, after he similarly rushes his demisemiquavers towards the octave leap.

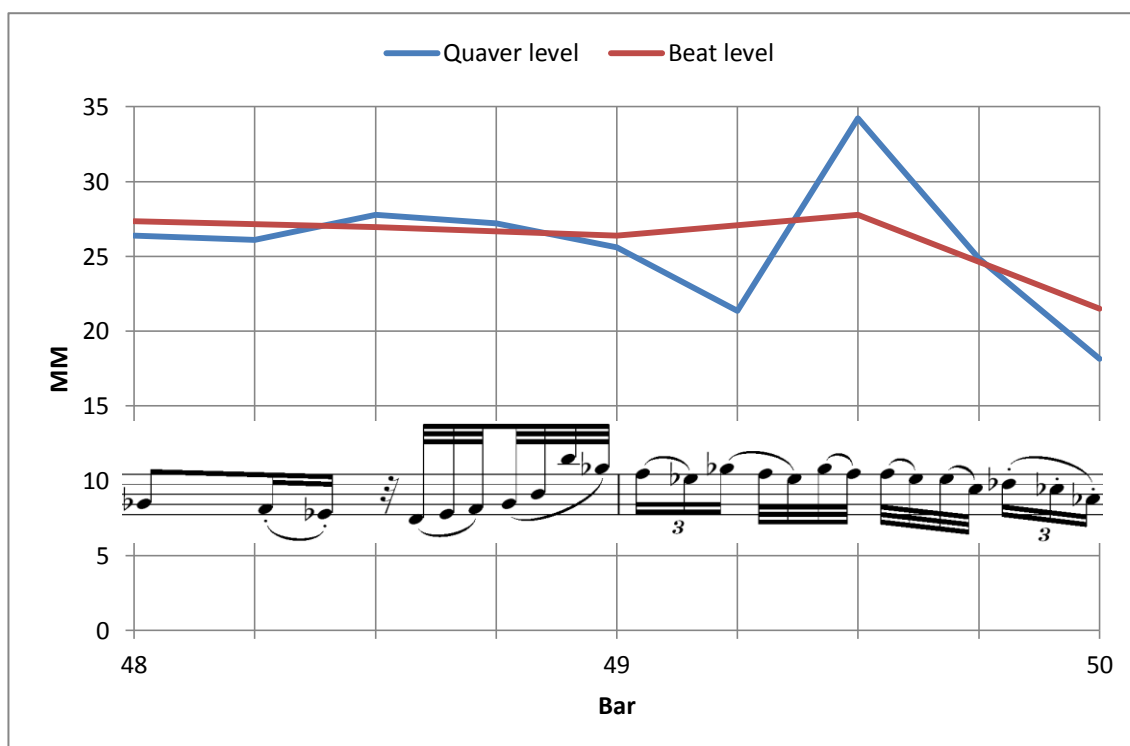


Figure 5.35 Quaver and beat data, bb. 48-49, Oistrakh 1961.

Increasing the level of detail by dividing the music into quaver beats reveals Oistrakh's shaping of the passage towards the downbeat agogic far more vividly, followed by a sudden acceleration on the second quaver of the bar to compensate. Although beat data can be extremely useful when examining the tempo shaping of performances at a higher structural level, this graph clearly illustrates how a greater level of scrutiny is required in order to isolate more localised rubato, such as that involving *portamento* or agogic accents. Other players who make particularly noticeable use of an agogic accent on the first triplet of bar 49 include Martzy, Milstein and Szeryng. The degree of lengthening can be shown even more clearly by examining the speed of individual notes within the triplet figure:

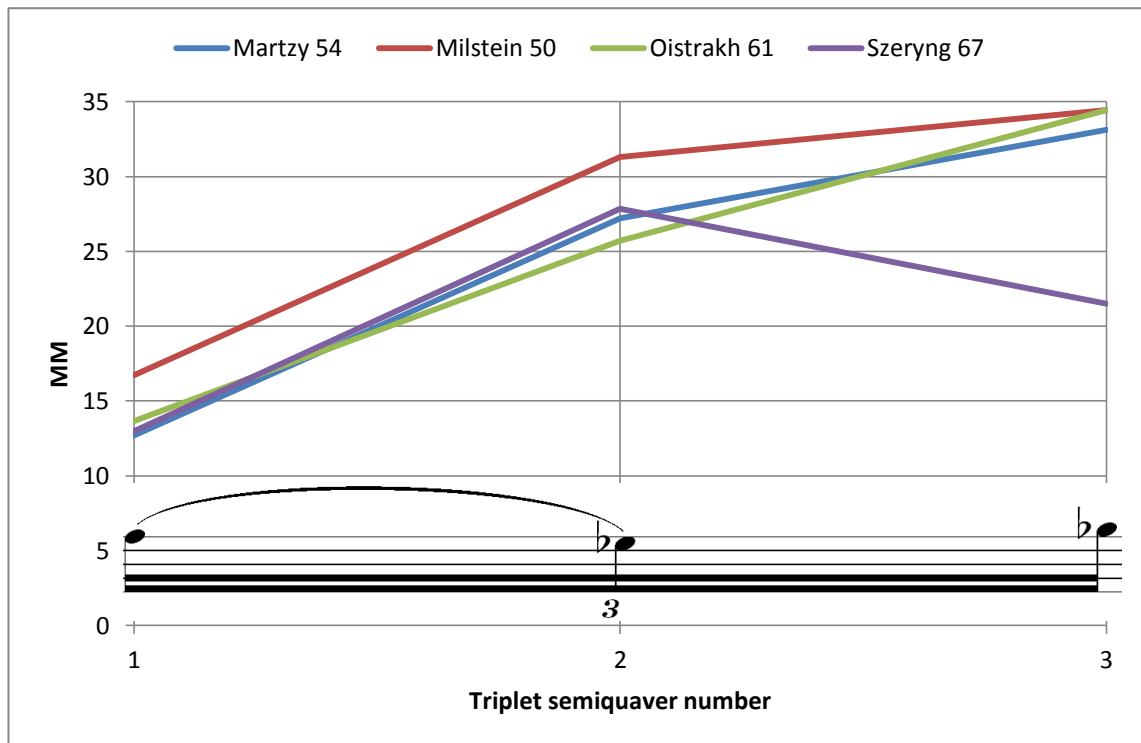


Figure 5.36 Triplet semiquaver data, b. 49,1, selected performances, Video 2.06.

In all four of these performances the accented triplet is approximately twice as long as the following one, effectively altering the rhythm to a semiquaver followed by two demisemiquavers.

Menuhin's performances of bar 49 is particularly unusual with relation to his lengthening of individual notes:

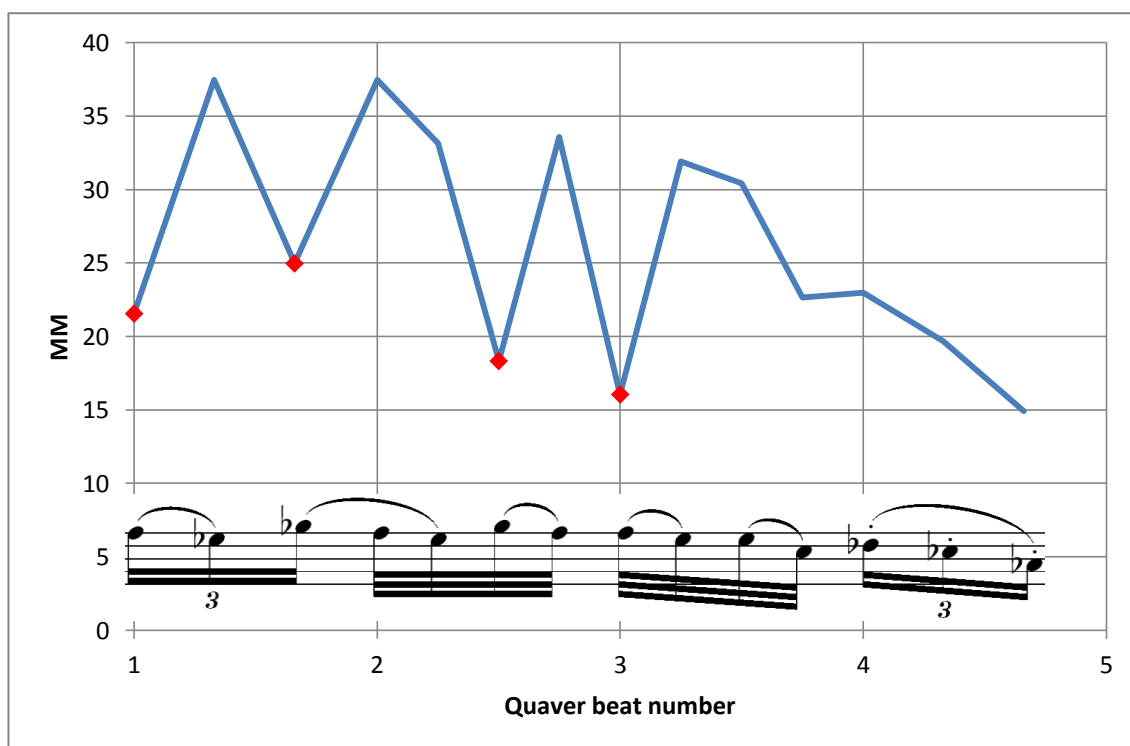


Figure 5.37 Note data, b. 49, Menuhin 1949, Video 2.07.

This graph shows the MM for every note Menuhin plays in bar 49, divided into quaver beats for ease of observation. It should also be noted that the length of the final triplet is determined by the re-entry of the orchestra rather than by the end of the soloist's A-flat. Menuhin lengthens four notes with agogic accents, which are marked in red on the graph. Agogic accents are most commonly found on strong beats or notes of a particular expressive importance; however, here the second and fourth notes do not seem to fit into either category. Instead, Menuhin seems to be drawing attention to the irregularities in Brahms' slurring through the first half of the bar by accentuating the first in each group:



Figure 5.38 Agogic accents, b. 49, Menuhin 1949.

3.4 Bars 52 to 54

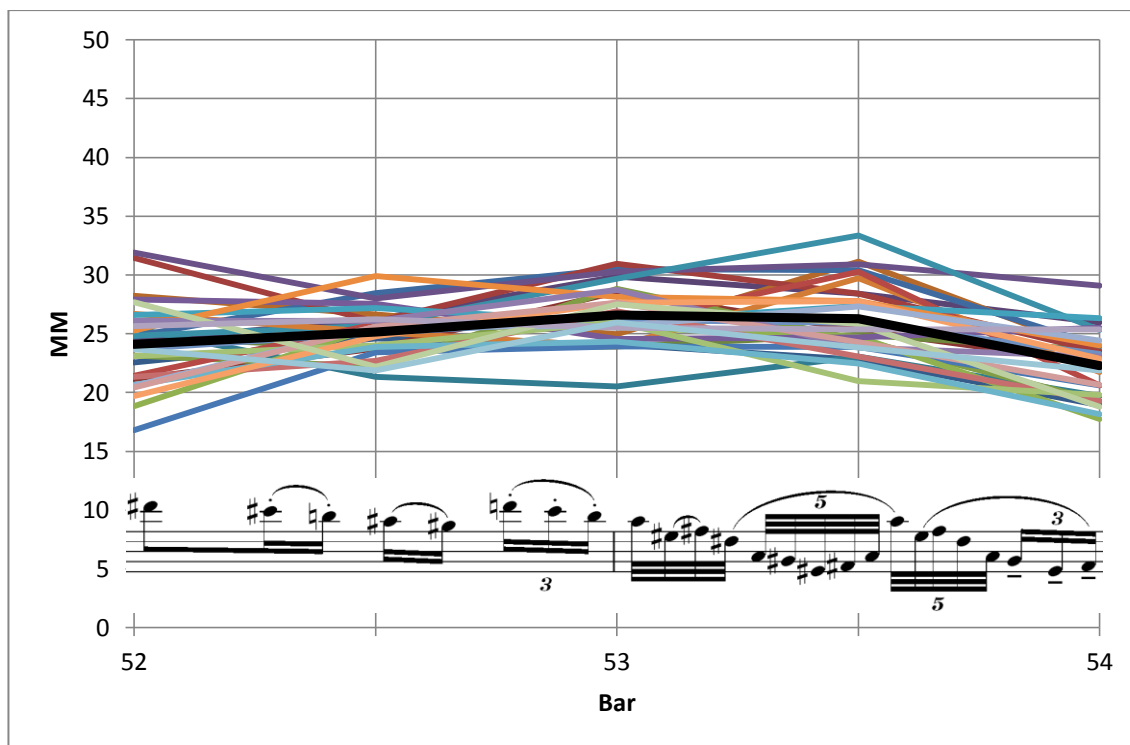


Figure 5.39 Beat data, bb. 52-54, all performances.

As with the preceding entry, little shaping is evident over this two-bar phrase as a whole, with players instead employing rubato on a smaller scale in order to bring out expressive rather than higher-level features within the music. Common locations for agogic highlighting include the D-natural on the last quaver beat of bar 52, which is often arrived at by means of a *portamento*, along with A-naturals on the first and second crotchet beats of bar 53. As we will see in the following examples, however, the manner in which these agogic accents are executed differs greatly between performances.

Menuhin again employs a great deal of flexibility during this solo entry, exploiting the recitative-like feel created by the constantly changing note values and sparse orchestral accompaniment.

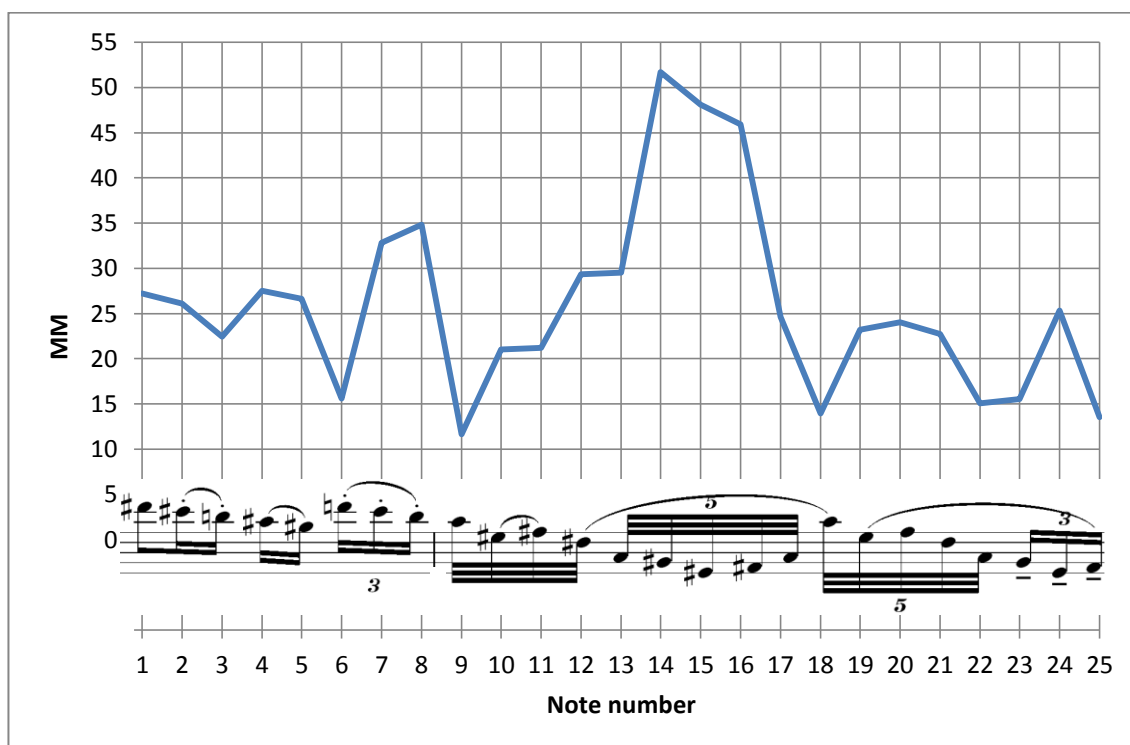


Figure 5.40 Note data, bb. 52-54, Menuhin 1949, Video 3.01.

This graph shows the MM value for every note within bars 52 to 53. It is important to note that in this instance, whilst the MM values reflect the differing duration of notes, the x-axis does not and is therefore not proportional to time. The downward spikes on notes 6 and 9 represent Menuhin's agogic lengthening of the D-natural on the third quaver of bar 52 and the A-natural on the first beat of the following bar, both of which are musically significant for a number of reasons: the D-natural represents a sudden leap in pitch following the downward scale pattern that precedes it, as well as signifying a surprising change of direction in the music's harmonic progression following the move to B major at the start of the bar. The A-natural falls on the

strongest beat of the bar and also represents a chromatic alteration from the A-sharp in the preceding bar. The first agogic, D, is lengthened to the extent that the triplet rhythm is effectively changed to a semiquaver followed by two demisemiquavers. Menuhin then shapes the following groups of demisemiquavers and quintuplets towards the A on the second beat of the bar which he plays as a harmonic and arrives at by way of an upward *portamento*. Lengthening of these three notes occurs in many other performances, including the following by Francescatti, Heifetz, Huberman, Kreisler, Milstein and Stern:

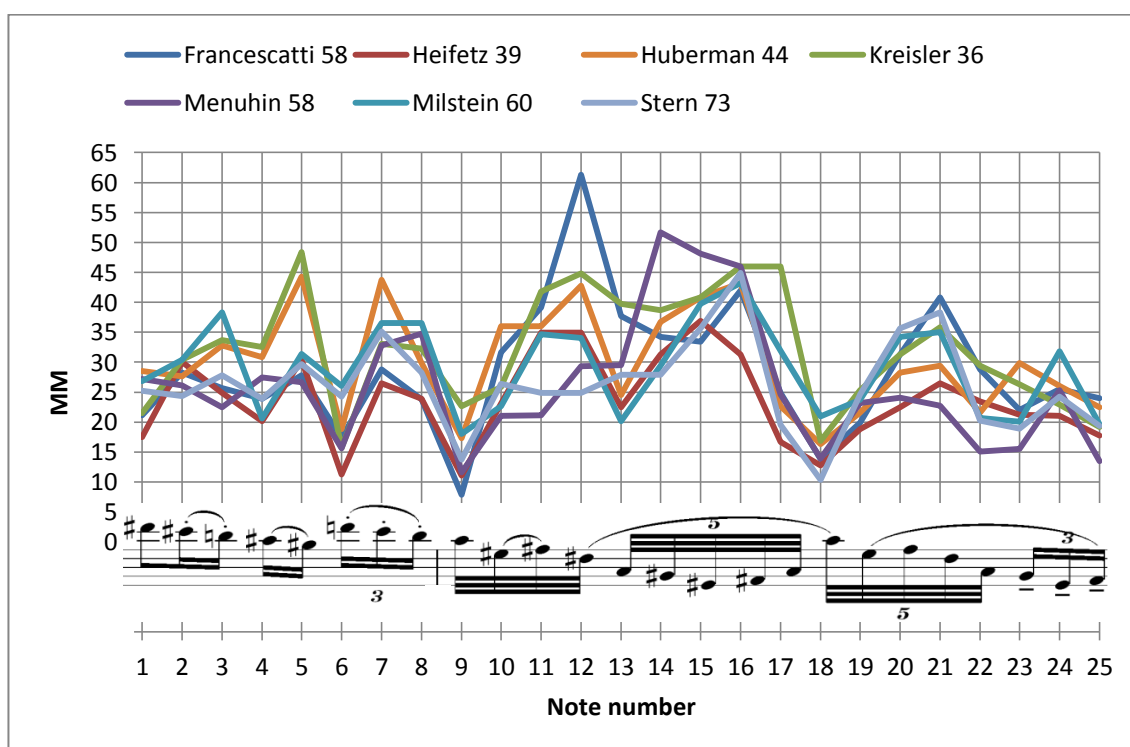


Figure 5.41 Note data, bb. 52-54, selected performances.

Kreisler and Huberman add even more emphasis to their D-natural in bar 52 by markedly anticipating it following a very short preceding semiquaver. Further attention is drawn to the note by way of a pronounced upward *L-portamento*.

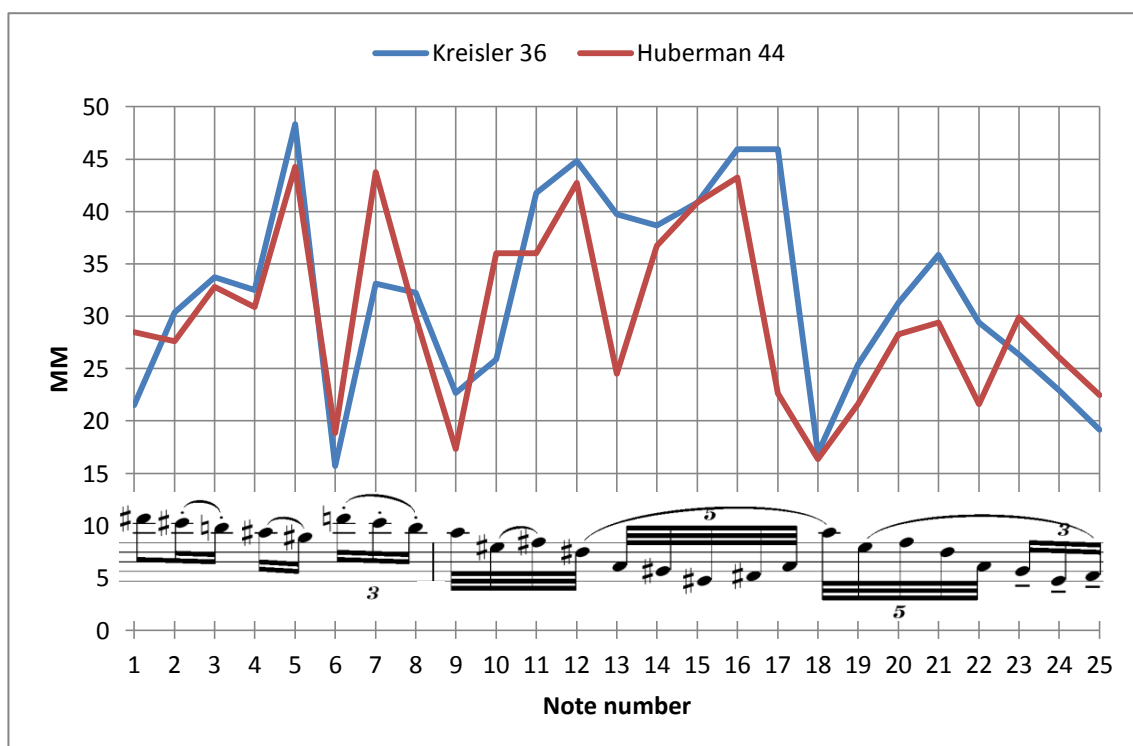


Figure 5.42 Note data, bb. 52-54, selected performances, Video 3.02.

Whereas many players prepare for a longer A on the second beat of bar 53 by accelerating through the preceding quintuplet, Kreisler's lengthening is far more sudden, in the same manner as his lengthening of the D-natural in bar 52.

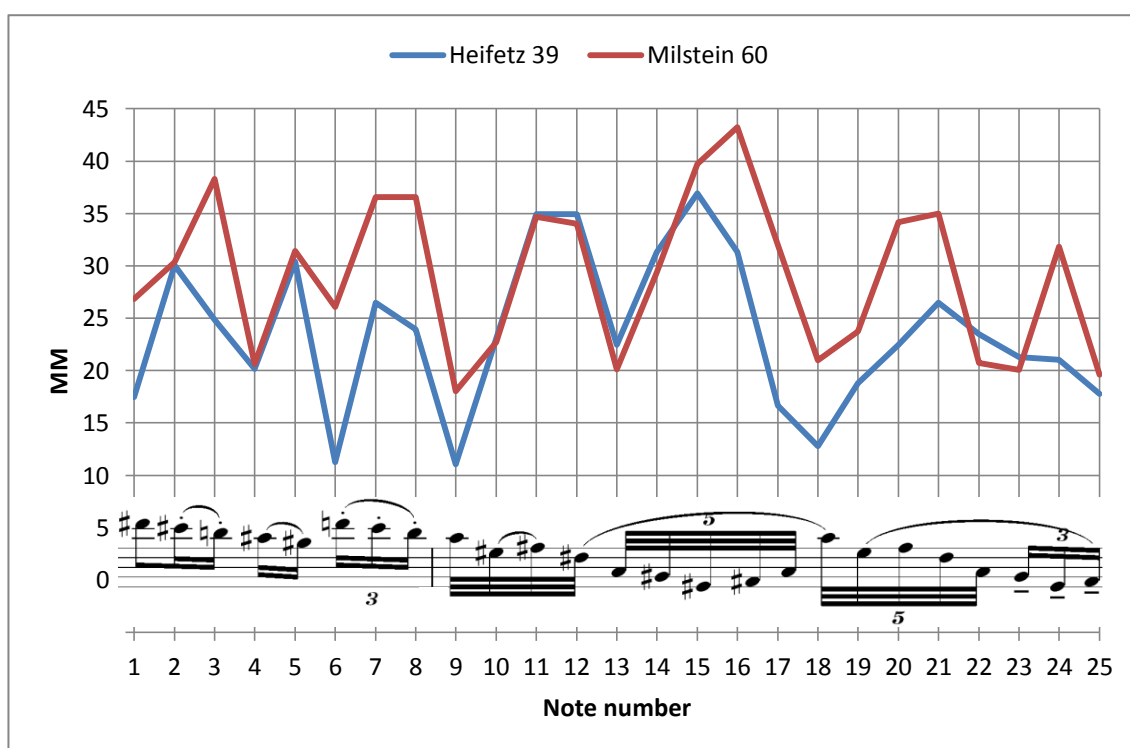


Figure 5.43 Note data, bb. 52-54, selected performances, Video 3.03.

Heifetz and Milstein exhibit a very similar tempo contour, using rubato to highlight almost every quaver beat during the course of the two bars by shaping their performances around agogic accents on notes 1, 4, 6, 9, 13, 18 and, in Milstein's recording only, 22 and 23. There is a clear tendency across all performances in this section for agogic accentuation to occur at 'strong' points in the bar, with the vast majority occurring at the beginning of crotchet beats and others, such as the D-natural at the end of bar 52, occurring at the beginning of slightly-weaker quaver beats. Many players add further emphasis to this D-natural by arriving on the note by means of a *portamento* or by anticipating the note slightly ahead of the orchestral accompaniment. The A-natural at the mid-point of the following bar is also commonly arrived at following an upward *portamento* and is most often played as a natural harmonic on the A-string, which draws added attention to the note by way of a change of tone colour. This kind of accentuation of strong beats adds a certain degree of rhythmic clarity to the second bar of the passage, particularly given the context of

rapid and rhythmically varied note figurations, as well as perhaps making it clearer for the orchestra to know where to place their occasional accompanying interjections.

3.5 Bars 56 to 63

Following the two short two-bar solo entries in bars 48-9 and 52-3, the next extended solo violin passage begins in bar 56 and leads up to the pause at the end of bar 63. This passage begins with an emotionally-charged four-bar phrase marked *forte* and *espressivo più largamente*, with Brahms utilising a number of wide and expressive intervals within a legato context. This is followed by a contrasting *piano* four-bar phrase, in which the triplet idea from bar 60 is developed and varied both melodically and rhythmically in a typically-Brahmsian fashion. These two four-bar phrases are clearly articulated in the tempo contour of all thirty performances by way of some degree of slowing on the second beat of bar 59.

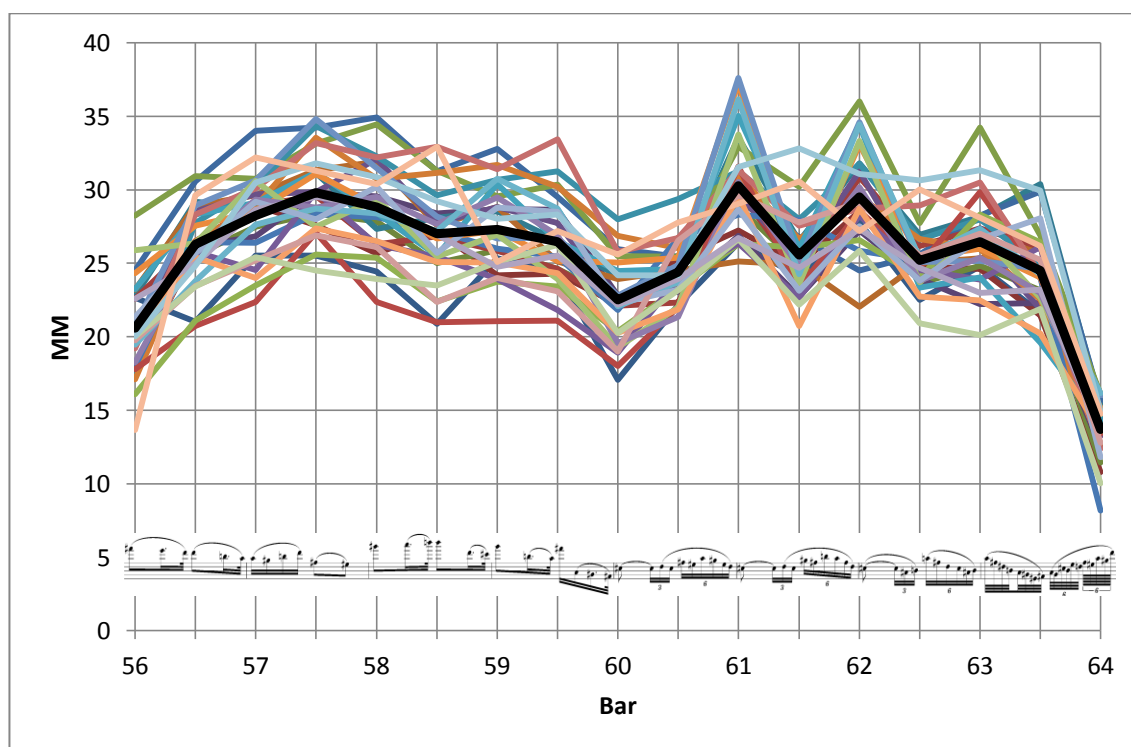


Figure 5.44 Beat data, bb. 56-63, all performances.

Although the average performance, indicated by the thick black line, shows a relatively smooth arch-shape over the first four-bar phrase, it is clear that there is much disparity between the different performances. Interestingly, the *più largamente* instruction is not obviously implemented by many players, with the MM for the passage generally ranging between 25 to 30 bpm. A number of performers suddenly broaden the tempo in bar 58, however, highlighting the melodic peak as the line suddenly jumps to a higher register. There is also a general tendency to slow at the end of bar 59, often by way of pausing on the G-sharp, which prepares for the sudden shift in musical feeling from bar 60 to the end of the passage.

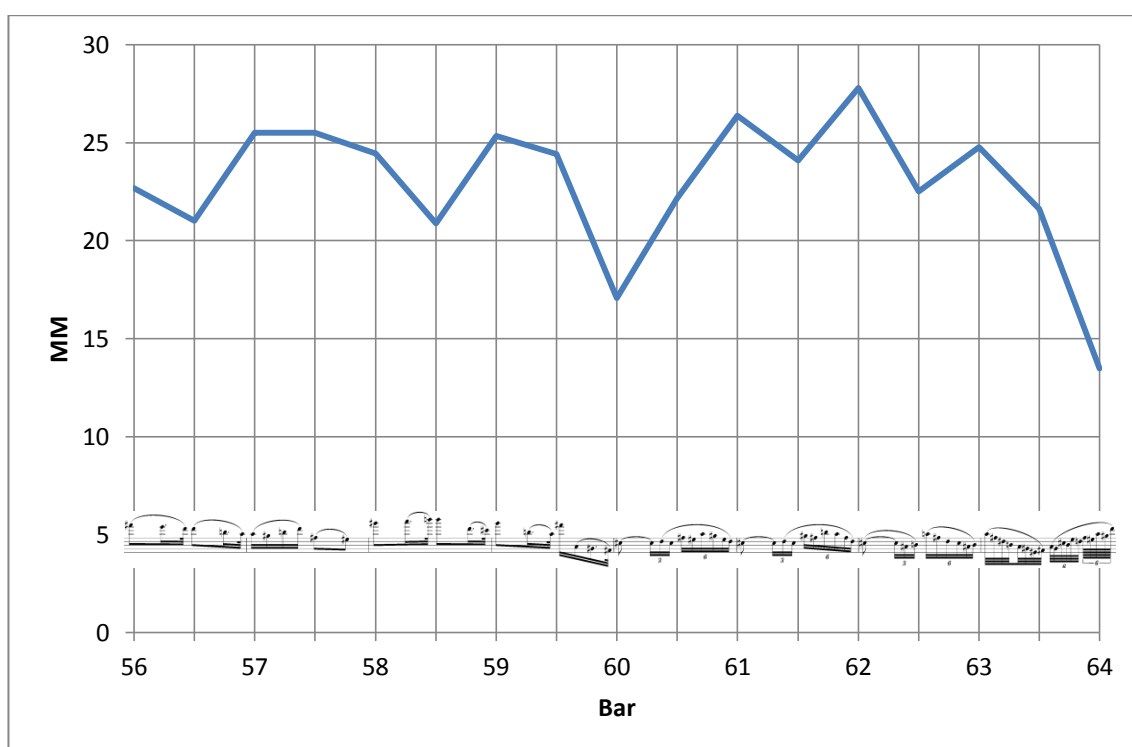


Figure 5.45 Beat data, bb. 56-63, De Vito 1955, Video 4.01.

Clearly, we can see the broadening at bar 58 in De Vito's recording of the passage where she suddenly pulls back at the climax before speeding up during the second beat to compensate. There is also a substantial slowing at the end of bar 59, marking

the change of mood brought by the *piano* section that follows. This is predominantly the result of De Vito lingering on the G-sharp at the end of the bar before playing the final demisemiquaver as an *a tempo* upbeat to the new phrase. Almost every recording exhibits a noticeable lengthening of this second beat by prolonging the G-sharp in this way, with the only exceptions being Heifetz's 1939, Milstein's 1950 and 1954 performances. This added pause provides a brief moment of hiatus for the listener, which separates the fiery outpouring of bars 56 to 59 from the following *piano* section, which has a more mysterious and reticent feel. By way of contrast, the lack of a substantial pause in the aforementioned recordings by Heifetz and Milstein give the same *piano* passage a more urgent feel, without allowing all of the tension built up during the preceding section to dissipate.

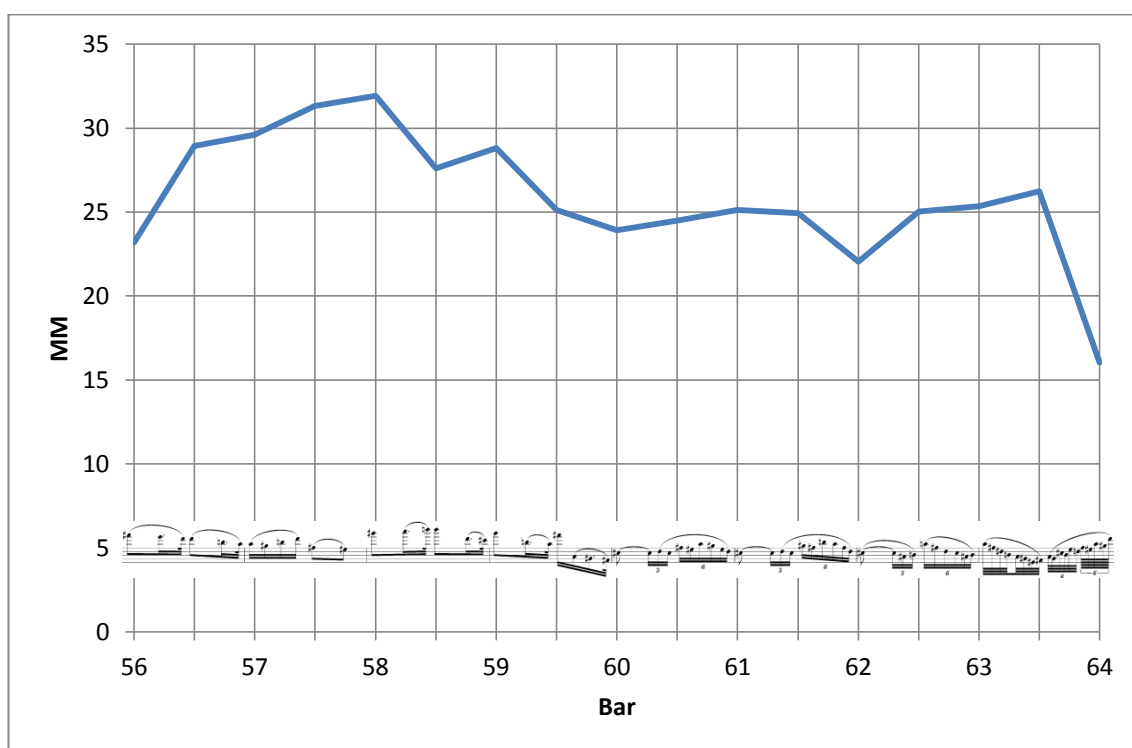


Figure 5.46 Beat data, bb. 56-63, Heifetz 1939, Video 4.02.

Heifetz's 1939 recording also exhibits a broadening of the melodic climax in bar 58, which is further intensified by one of his characteristic upward *L-portamenti*. Instead of timing this slide with the downbeat in the orchestra, which is clearly preceded by a rising semiquaver scale figure in the violins during the previous beat, Heifetz plays his slide early in the manner of an anticipation. This not only creates a greater sense of urgency by rushing into the climax, but also allows for slightly more time to be taken in the next bar without further disturbing the overriding tempo. Whereas De Vito prepares the broader climax by slowing slightly during the last beat of bar 57, Heifetz does the opposite, driving straight through and leaving the orchestra trailing in his wake. Almost all of the other performances take a similar approach to De Vito at this point, aside from Kogan, Renardy and Oistrakh in the earliest of his recordings, who all rush through into bar 58. These different approaches represent two diametrically opposed methods of highlighting the same musical material; on the one hand delaying the climax and therefore creating tension through expectancy and, on the other, by rushing into it urgently before the orchestra has a chance to finish playing the preceding bar. Both De Vito and Heifetz exhibit some degree of 'overdotting' in this passage, by shortening a number of demisemiquavers in bars 56 and 58, thus making more of a feature of these dotted rhythms and creating a greater sense of urgency in the music.

Although the use of rubato in the final four bars of the passage is much more striking than in the first four, there is far more consistency between recordings at beat level. Figure 5.44 shows a clear tendency amongst performers to speed up during the triplet semiquavers on the second beat of bars 60 and 61 following a longer first beat, creating the dramatic zig-zagging pattern on the graph. Whereas the first beat of these two bars is controlled by the orchestral accompaniment, namely moving semiquavers in the wind, the second beat is completely unaccompanied, thus allowing more scope for rubato within the solo line's triplets.

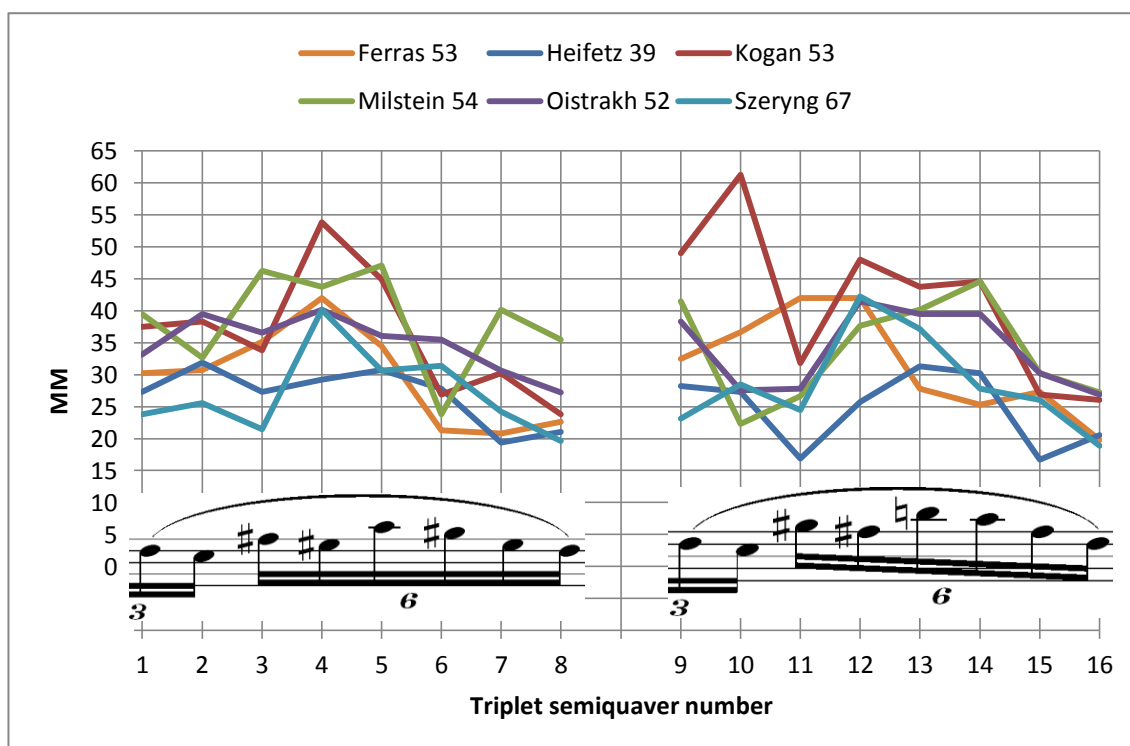


Figure 5.47 Triplet semiquaver data, bb. 61-62, selected performances, Video 4.03.

Figure 5.47 shows the metronome mark for each individual triplet semiquaver in bars 60 and 61 in six performances that employ flexibility differently within these figures. Although there are obvious differences in the timing of all six performances, there is a clear tendency overall to slow down towards the end of each bar. Ferras exhibits the clearest arch shaping of each group of triplets in his 1953 recording, in which he accelerates through the first four notes before slowing towards the end of each bar; this pattern roughly corresponds to the melodic contour of the triplets, as well as the dynamic shape arising from the notated *crescendi* and *diminuendi* on the second beat of each bar. The tempo contour of Oistrakh's 1952 performance shows similar arch shapes, although his are contained solely within the second half of the bar whereas Ferras' arches encompass the first two triplets as well. In addition to this kind of arch shaping across each bar as a whole, other performers chose to lengthen particular notes more suddenly, in the manner of agogic accents, which accounts for the sudden downward spikes in some of the graphs, in particular those of Kogan and Milstein's respective 1953 and 1954 recordings.

There is much variety of note length in Kogan's 1953 recording, in which the metronome mark ranges from 24 on the slowest triplet (number 8) all the way up to 61 on the shortest triplet (number 10). The dramatic agogic lengthening on Kogan's sixth and eleventh triplets, which disturb the general arch shaping, serves to highlight the notes on which these lengthenings take place and are all preceded by much quicker triplets to compensate. The first of these agogic accents is located on the G-sharp during the second beat of bar 60, and represents the peak of the small *crescendo* which is notated in the second half of the bar. The second takes place on the G-sharp on the second beat of bar 61 and is arrived at by way of a prominent upwards single-finger *portamento*. The first half of bar 61 is a direct repetition of bar 60 and this note represents the first point of departure in the melodic line by rising an extra tone to G-sharp rather than F-sharp.

Milstein's rubato during these triplets in his 1954 recording is also inextricably linked to his use of *portamento*; he highlights the same F-sharp in the first group by way of an agogic accent immediately followed by a downward *portamento*, although Milstein changes fingers at the end of the slide in the manner of a B-*portamento* and his shift is far slower and therefore more noticeable than Kogan's. In the second group of triplets Milstein also plays a prominent *portamento* up to the G-sharp, although he again makes use of a B-*portamento*, which has the effect of delaying the G-sharp rather than anticipating it; this has the effect of lengthening the preceding C-sharp triplet rather than the G# itself, as can be seen on the graph.²⁷ In addition to these two slides, Milstein also plays a B-*portamento* downward from the F-sharp on the fifteenth triplet, which also corresponds with a slowing on the graph.

In relatively rapid figuration such as these triplet semiquavers, it can be argued that rubato takes place to some degree out of necessity. In terms of the mechanics of *portamento*, it takes time for a finger to slide from one note to another and the wider

²⁷ A number of issues have been considered in the measurement of note lengths where *portamento* is involved. See chapter 2, pp. 103-113.

the interval, the longer it takes to complete the physical action of shifting. This effect becomes more problematic when note values are shorter and less time is therefore available to get from one note to the next. However, rubato in the above examples from Kogan and Milstein is clearly employed intentionally, as a device to highlight the expressive shifts and is not merely a necessary evil that results from them. Kogan's slides are relatively quick and the vast majority of lengthening that occurs happens either before or after the *portamento*; these notes could be easily shortened if it were Kogan's intention to maintain strict note durations throughout the triplet figurations, which indicates that his use of rubato is most likely deliberate. Milstein's slides in the same passage are far slower than Kogan's, although there are numerous instances of quicker, less obtrusive shifts elsewhere in his performances, which suggests that the use of slower shifts is a deliberate means of making them more noticeable and therefore exploiting more of their expressive potential.

In Heifetz's 1939 performance there is also a substantial agogic lengthening and L-*portamento* up to the G-sharp on the second beat of bar 61, which is further reinforced by a wider *vibrato*. In addition to this, Heifetz lingers noticeably on the penultimate triplet in each bar with an altogether different result; instead of giving the note an accented feel, as is the case with the G-sharp following the slide, the feeling here is one of lingering rather than highlighting by delaying the final, quicker triplet in the bar which serves as an 'a tempo' upbeat to the following bar. This effect of hesitancy is partly due to the fact that the lengthening occurs on a 'weak' note in the middle of a quaver beat and also because the note is played with a *diminuendo* and a shallower, less expressive *vibrato*.

Szeryng's performance of these triplets represents the closest to actual rhythmic alteration, whereby the triplet group beginning on the second beat of both bars sounds almost exactly like a semiquaver followed by two demisemiquavers.

In bars 62 to 63, a number of performers make use of agogic accents on the A-naturals which come on the second beat of bar 62 and on both beats of bar 63. The first two of these represent melodic peaks before increasingly rapid downward figurations whereas the last, an octave below the first two, functions as a chromatic appoggiatura which resolves downwards to G-sharp.

In the following example, featuring recordings by Ferras, Francescatti, Milstein and Stern, the metronome mark has been calculated for each individual note, beginning with the A-sharp in bar 62 and ending with the penultimate hemidemisemiquaver, G, in bar 63. The length of the final note before the pause has not been included, as the accompanying *diminuendo* makes it extremely difficult to measure when exactly the note stops sounding and the following rest begins.

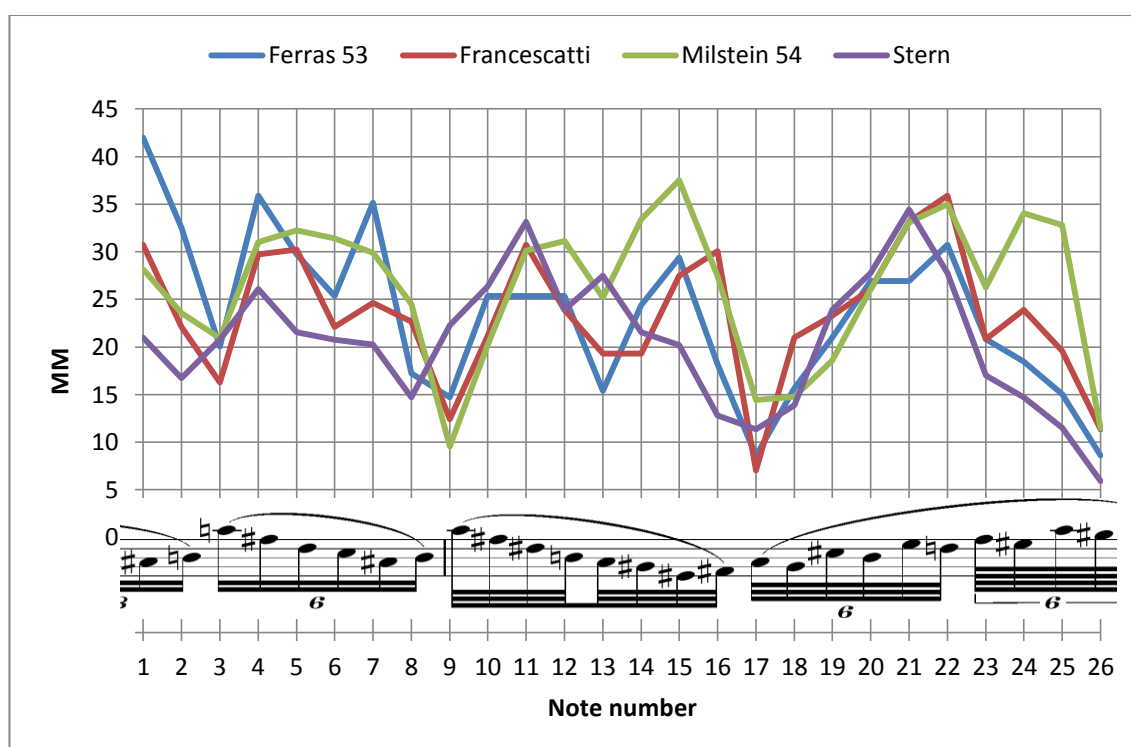


Figure 5.48 Note data, bb. 62-63, selected performances, Video 4.04.

In the above four performances of the passage, the note figurations clearly gravitate towards these three agogic accents on the As, represented by notes number 3, 9 and 17 on the graph. There are also intermediary, less prominent agogic accents appearing mid-way through beats: Ferras and Francescatti lengthen the mid-point of bar 62 beat 2 (note 6), Ferras, Francescatti and Milstein lengthen the mid-point of bar 63 beat 1 (note 13) and Francescatti and Milstein lengthen the mid-point of bar 63 beat 2 (note 23). Although the elongation of these intermediary agogic accents is not nearly as noticeable as on the surrounding on-beat As, they can be heard clearly on closer listening. This can be seen as a kind of 'agogic hierarchy', whereby the length and resulting prominence of an agogic accent is varied based on where in the bar it occurs, in a similar manner to the way that beats in dance music are stressed dynamically according to their importance in the bar, for example 1=strong, 2=weaker, 3=weakest in a waltz.

Stern's interpretation differs from the others in that his lengthening occurs on the note preceding each A; this does not have the effect of accenting the longer preceding note, but highlights the As in a different manner, by delaying them in the same way that that Heifetz does in bars 60 to 61.

The two four-bar sections of this entry are very different musically and this is reflected not only in the tendency to divide the section in two by means of the overall tempo contour, but also in the manner in which rubato is used within each half of the passage. The first half represents a clear four-bar phrase and, although it contains a number of wide intervals, the relatively long note values and rhythmic simplicity lends the music a lyricism comparable to the opening entry from bars 32 to 46. Although most players use some degree of small-scale rubato to highlight the melodic climax in bar 58, the overall tempo contour of the four-bar phrase is mostly preserved by means of some kind of compensation being applied. The second half of the passage, bars 60 to 63, has far more in common with the previous two 'recitative-like' sections, in that it

is more melodically fragmented and rhythmically complex, with predominantly shorter note values. This sense of fragmentation and the lack of obvious musical direction is similarly manifested in performers' use of rubato, whereby shapes are created on a smaller scale, within individual bars or note figurations, rather than encompassing the four-bar passage as a whole. In general, then, rubato is used both to reflect and highlight the sense of musical direction at any given time; when phrases are longer and more expansive performers tend to use larger-scale shaping, whereas the fragmentary nature of passages with less sense of overall direction generally results in rubato being used on a much smaller scale, with more-frequent use of agogic accents and shaping of shorter note figurations.

3.6 Bars 64 to 87

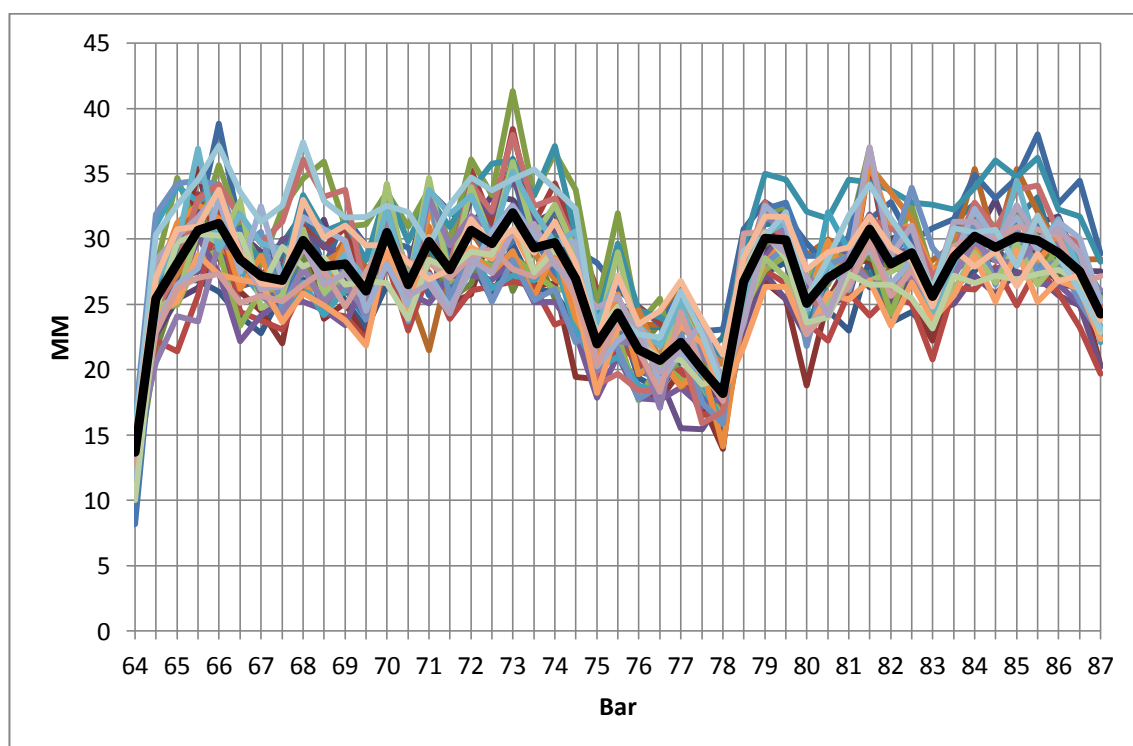


Figure 5.49 Beat data, bb. 64-87, all performances.

Following the pause at the end of bar 63 the solo violin continues uninterrupted for twenty-two bars until the next orchestral tutti in bar 87.²⁸ This section encompasses the most substantial notated tempo indication, a three-bar *calando* which is indicated from bar 75 until a *Tempo I* marking at the beginning of the recapitulation in bar 78, and can be observed in all performances on the above graph. Due to its relative size it is useful to break this section down into smaller portions for analysis, beginning with bars 64 to 68.

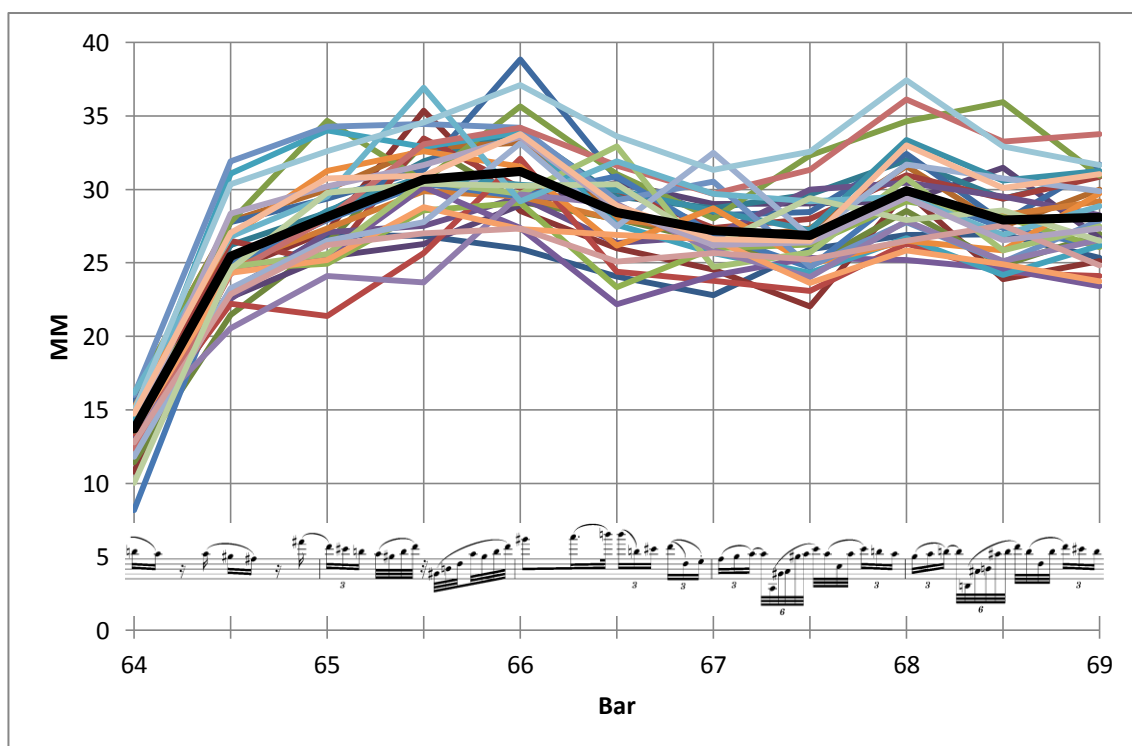


Figure 5.50 Beat data, bb. 64-68, all performances.

There is a general trend to divide these five bars into two groups. Bars 64 to 66 tend to be shaped relatively smoothly with a slight *accelerando* and *ritardando*, whereas bars 67 and 68 often exhibit the reverse, with the second beat of each bar generally being performed quicker than the first, adding to the overall sense of unease.

However, on closer inspection of individual performances it is clear that a number of

²⁸ No excerpt from the score has been included with this particular graph, given that the substantial length of the passage would render the notation too small to be readable.

different approaches are taken with regards to the way rubato is used to articulate the phrase structure within this passage. Of the performances in which obvious tempo shaping occurs, players tend to divide the five-bar passage into either a 3+2 or 3+1+1 bar structure. The two main points at which extra-structural rubato is commonly applied are the melodic climax on the first beat of bar 66 and the first of two downward octave leaps on the second beat of the same bar, which is often played with *portamento*.

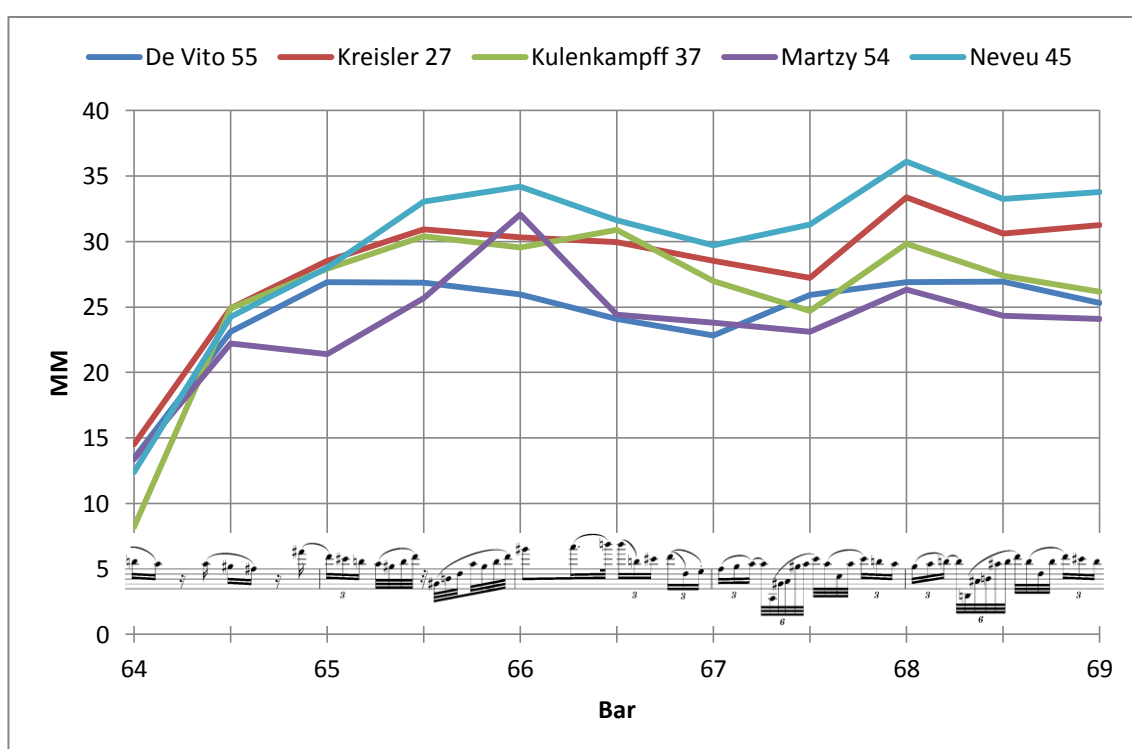


Figure 5.51 Beat data, bb. 64-68, selected performances, Video 5.01.

These five recordings all exhibit shaping with a 3+2 bar structure. Kreisler, Kulenkampff and Marzy all exhibit a slight slowing during the first beat of bar 67, whereas De Vito and Neveu do the opposite. This discrepancy results from subtle differences in players' approaches to phrase structure; whereas De Vito and Neveu

begin a new phrase shape from the downbeat of bar 67, the other three players treat the first three notes of the bar as the end of the previous phrase.

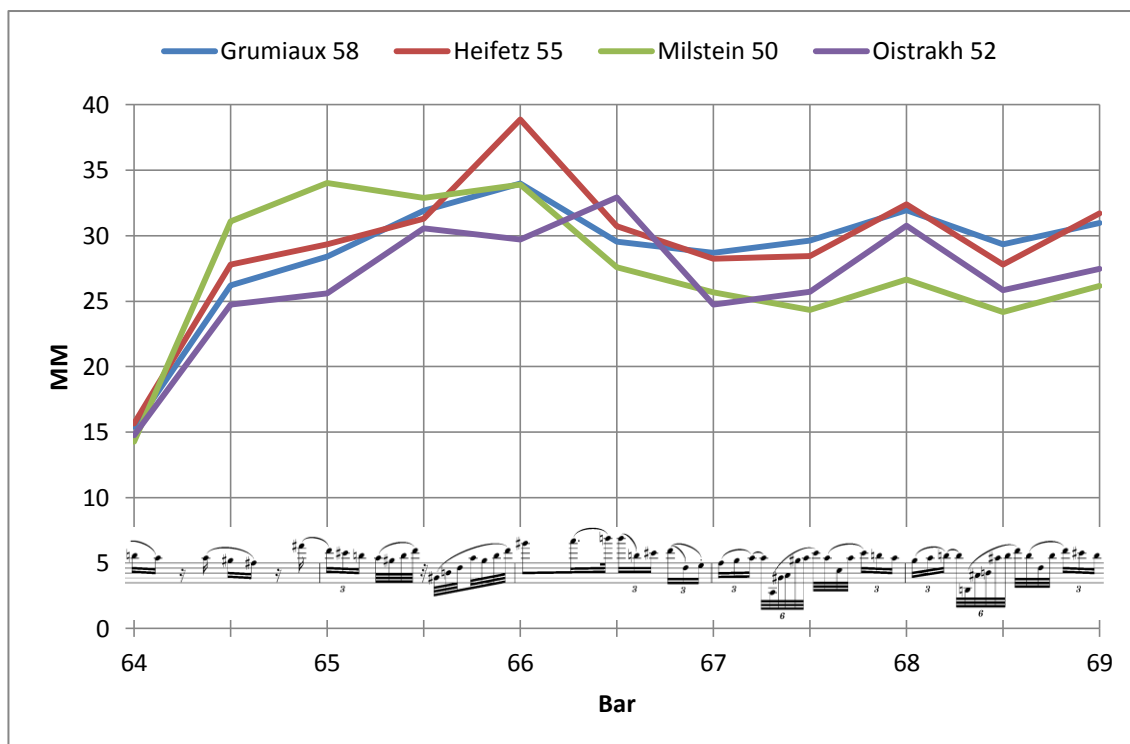


Figure 5.52 Beat data, bb. 64-68, selected performances, Video 5.02.

In the case of the performers shown in Figure 5.52, whilst the first three bars are again grouped together, bars 67 and 68 are each shaped with their own small-scale *rallentando/accelerando* shading, creating a clear 3+1+1 structure.

In contrast to the grouping exhibited in both of these graphs, Francescatti alone chooses to shape the passage as a single unit, with a clear arch shape over the whole five bars:

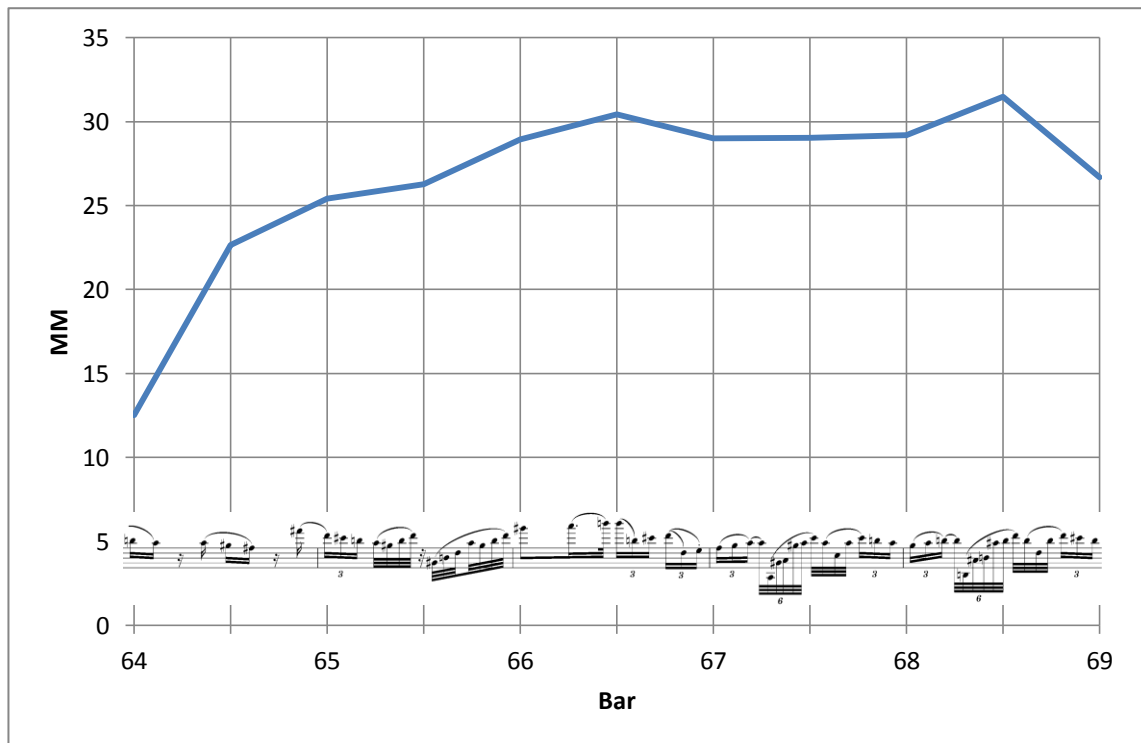


Figure 5.53 Beat data, bb. 64-68, Francescatti 1958, Video 5.03.

In addition to using rubato to delineate structural boundaries between phrase units, a number of performers use it to highlight features within these phrases, such as the melodic climax at the beginning of bar 66 following a dramatic upward flourish of demisemiquavers. Many performers accelerate towards this climax following the pause and then suddenly pull back as the music reaches its melodic peak, rather than maintaining a smooth tempo contour over the phrase as a whole, in a similar manner to the first beat of bar 58 discussed previously, which is identical aside from the turn being missing.

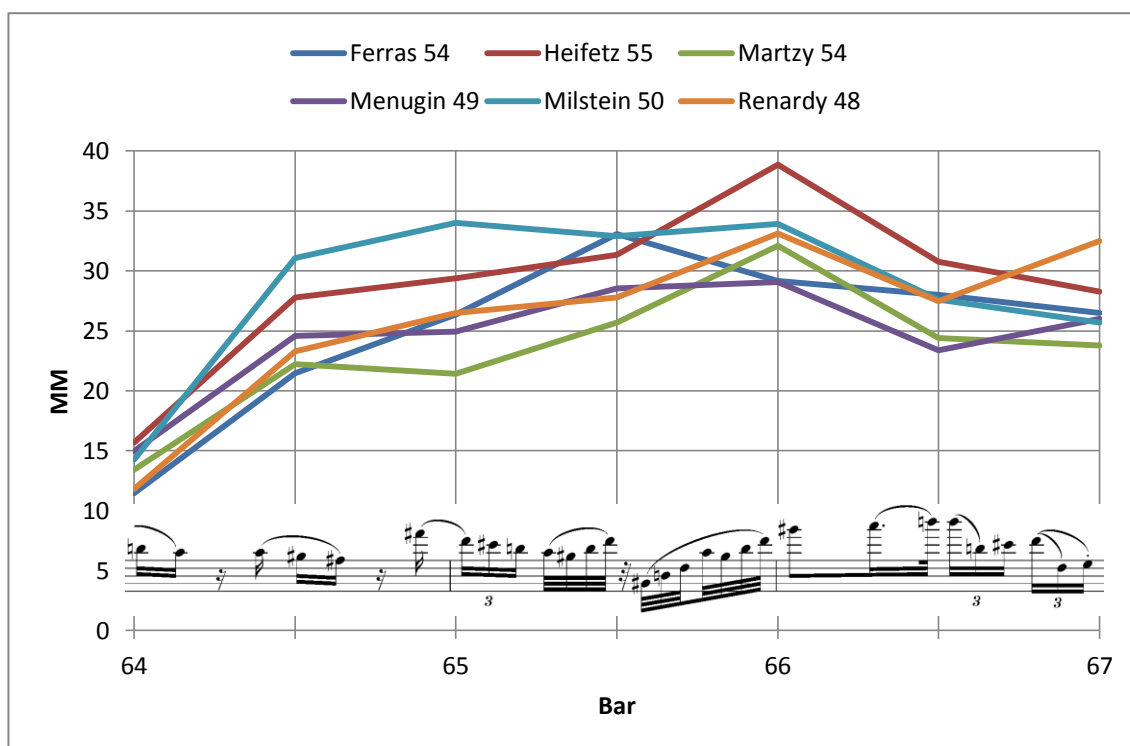


Figure 5.54 Beat data, bb. 64-66, selected performances, Video 5.04.

In all six of the above performances there is a clear broadening of the first beat of bar 66. In the Heifetz, Martzy and Renardy recordings the slowing is made even more apparent by a preceding *accelerando*, particularly on the second beat of bar 65 which contains the rushed demisemiquaver figure. Menuhin and Renardy both compensate for a broader first beat in bar 66 by speeding up again on the following beat, in order to repay some of the borrowed time.

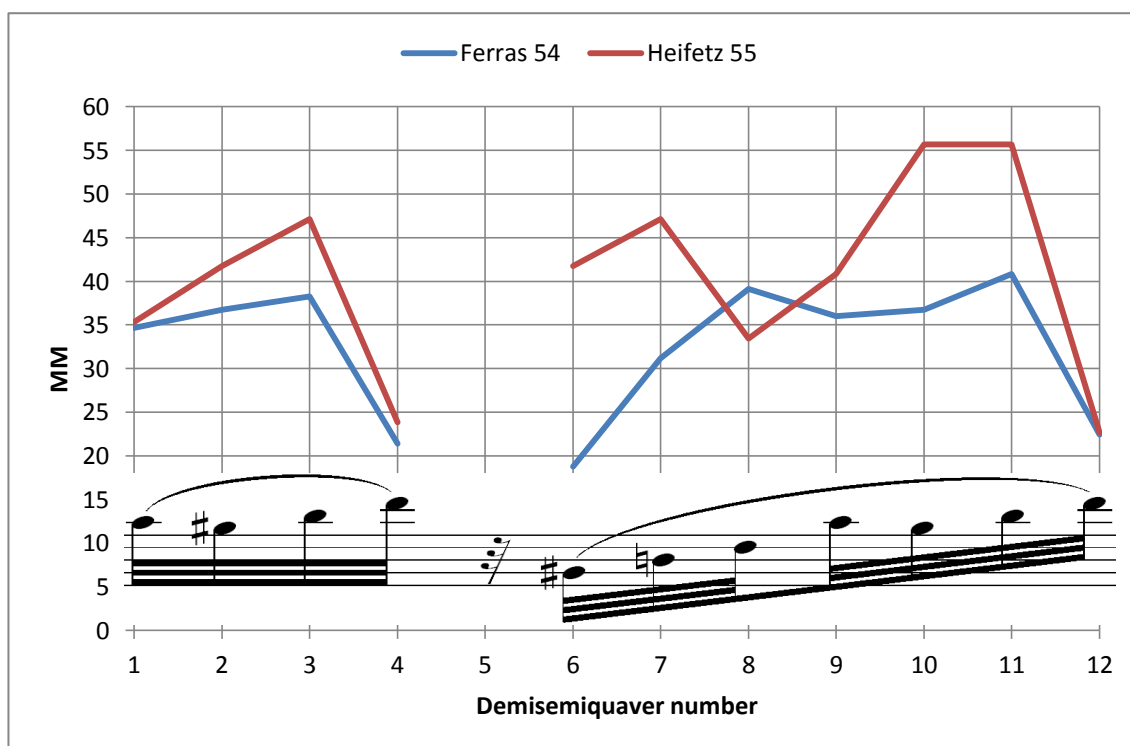


Figure 5.55 Demisemiquaver data, b. 65, selected performances, Video 5.05.

Many players, in particular Ferras and Heifetz, employ a great deal of flexibility within the demisemiquavers in bar 65, as shown in the above graph which begins on the second quaver of the bar when the demisemiquavers start. The fifth note, which marks the second beat of the bar, has been omitted as the onset happens in the orchestra rather than the solo part. In both cases there is a dramatic and somewhat surprising elongation of the last demisemiquaver of each group, each of which precedes a major beat in the bar. There are a number of reasons that could explain this lengthening; the performers could conceivably be holding on to the note for reasons of ensemble, thus giving the orchestra a chance to catch up after the considerably-rushed notes that came before. Alternatively, the longer notes could function by delaying the following note which falls on a major beat, an argument that is more easily justified with reference to the second of these, which is directly followed by the small-scale climax at bar 66. The earlier lengthened D is followed by a rest and so does not delay an important note, rather it could be seen that by lengthening this

note musical tension is maintained over the rest and therefore continues the sense of propulsion towards the end of the bar.

Ferras adds a greater sense of urgency by anticipating the G-sharp following the rest, placing it almost exactly when the orchestral cellos arrive on the second beat of the bar. A number of other performers make use of anticipations in this passage, most commonly on the F-sharp upbeat to bar 65. This note is often lengthened as well as being early in order to maintain cohesion with the orchestra, most notably by Heifetz in both of his recordings, Szeryng and Francescatti, who joins his F-sharp to the following D by means of a single-finger *portamento*. Szigeti adds further emphasis to the anticipated F-sharp in his 1945 recording by accenting the beginning of the note sharply with the bow.

The slurred downward octave at the beginning of the second beat in bar 66 is most often played with some kind of *portamento* and a number of performers allow extra time to make more of a feature of this expressive effect.

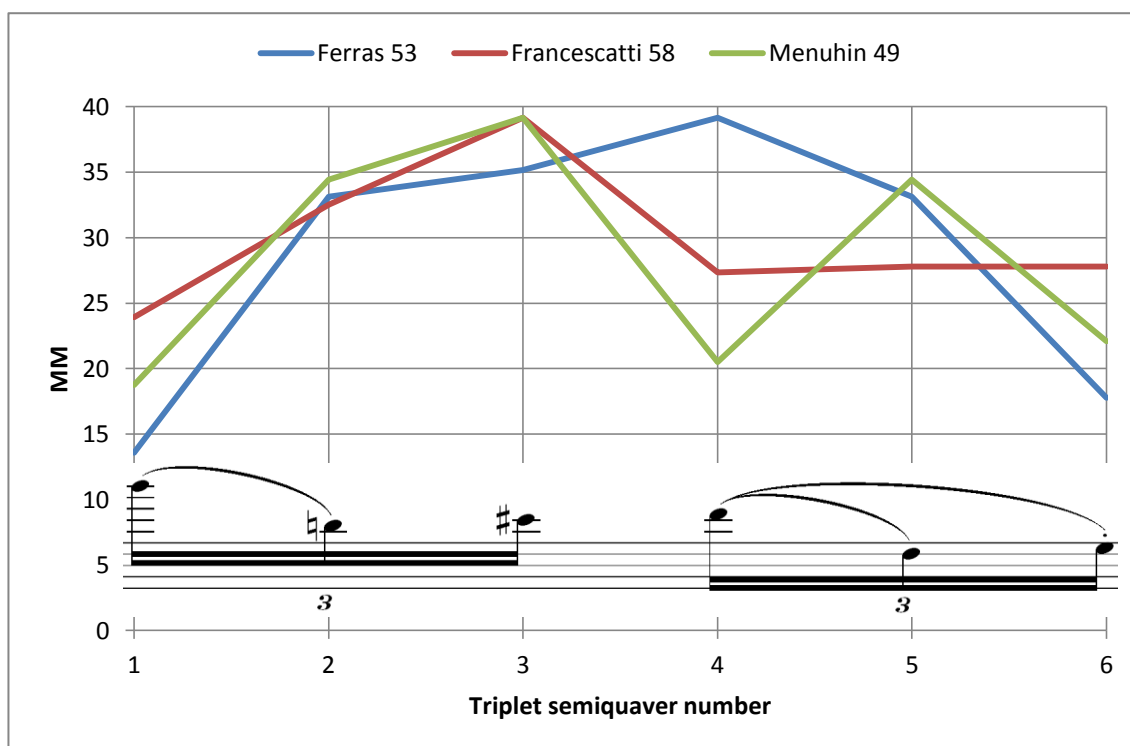


Figure 5.56 Triplet semiquaver data, b. 66,2, selected performances, Video 5.06.

This graph represents the MM for the six triplets on the second beat of bar 66 in recordings by Ferras, Francescatti and Menuhin, who all make a particular feature of this interval. In all three recordings a prominent downward *B-portamento* is played between the first two notes and the length of the second and third triplets is subsequently shortened to compensate for the extra time taken for the slide. Menuhin and, particularly, Ferras both hold on to the top B for a relatively long time before starting their slides, whereas Francescatti departs from the note almost immediately. Even though Francescatti's slide is slightly slower than Ferras and Menuhin's, the overall length of the note is therefore shorter. Ferras and Menuhin add further expression to their *portamento* by applying *vibrato* within their slides, whereas Francescatti's is a more-typically smooth transition from one note to the next.

A number of performers apply flexibility within the turn at the beginning of bar 66. In line with the tendency to rush through quicker note figurations, particularly in emotionally-fraught passages such as this, there is a tendency for players to accelerate through the turn, often interpreting the rhythm like this:



Figure 5.57 Turn with rhythmic alteration, b. 66,1.

rather than the following, which would be expected were the ornamental notes to be played evenly:



Figure 5.58 Turn without rhythmic alteration, b. 66,1.

This is especially noticeable in the recordings by Ferras, Grumiaux and Renardy, suggesting that this could be something of a French stylistic trait.

Video 5.07

Also interesting in terms of rhythmic alteration is Heifetz's performances of the four demisemiquavers on the start of the second beat in bars 67 and 68, in which he shortens the first and third notes to the extent that the effect is that of a 'scotch snap' rhythm rather than four even semi-semiquavers:



Figure 5.59 Demisemiquavers with rhythmic alteration, b. 67,2, as performed by Heifetz.

This has the effect of lengthening and consequently emphasising the A-naturals in bar 67 and the B-naturals in bar 68, which can be seen to resolve downwards chromatically to the A-sharp at the beginning of bar 69 in terms of voice leading:



Figure 5.60 Lengthened demisemiquavers, bb. 67-68, as performed by Heifetz, Video 5.08.

Milstein takes a slightly more conventional approach to note-lengthening during these two bars, choosing to lengthen the C and D melodic peaks during the second beat of each bar in his 1954 recording:



Figure 5.61 Lengthened demisemiquavers, bb. 67-68, as performed by Milstein, Video 5.09.

Bars 69 to 70 are extremely similar to bars 60 to 61 and performers tend to shape them in the same way, playing the second beat of each bar more quickly than the first and, on a note-by-note level, slowing slightly at the end of each bar within the context of the triplet figuration.

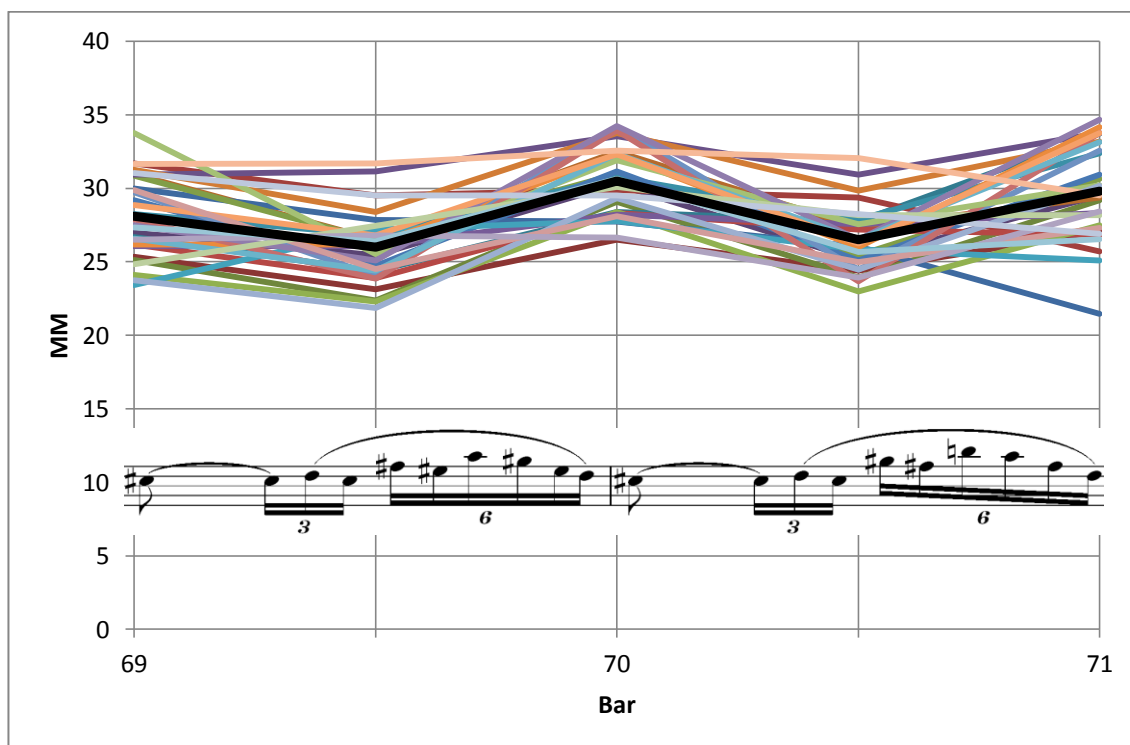


Figure 5.62 Beat data, bb. 69-70, all performances.

There are four exceptions to this general trend in bar 70: in both of Heifetz's recordings and, to a lesser extent, both of Szigeti's, the second beat of bar 70 is played slower than the first before speeding up again when the orchestra re-enters on the first beat of bar 71.

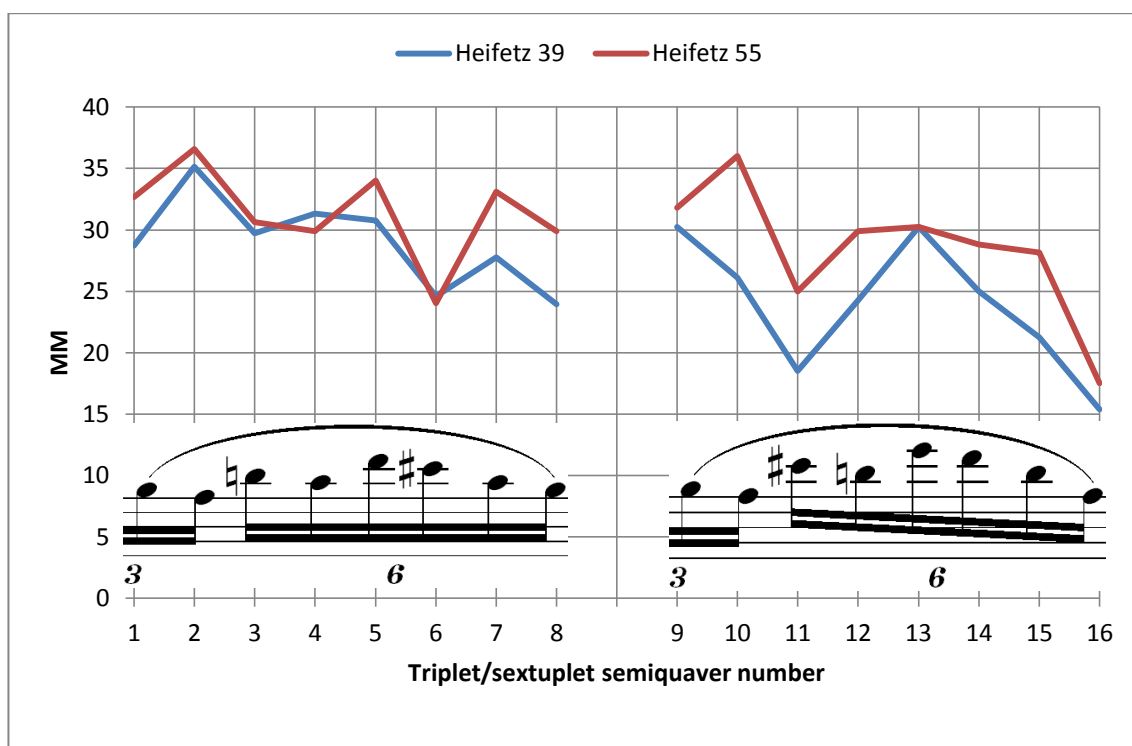


Figure 5.63 Triplet/sextuplet semiquaver data, bb. 69-70, Heifetz 1939 and 1955, Video 5.10.

The above graph shows Heifetz's two performances of both groups of triplets in bars 69-70, starting with the G-natural in bar 69. The second group is generally slower than the first, particularly towards the end of the group, and within the figuration there are two noticeable agogic accents, occurring on triplets number 6 and 11, with the second of these being arrived at by means of a prominent upward *portamento*. The lengthening of these notes is more severe in the later 1955 recording, although Heifetz

compensates more for the longer agogics by shortening the preceding note to a greater degree than in his 1939 recording.

Milstein makes *portamento* the main feature of the passage, taking extra time over each of the three slides, which are far slower than those of Heifetz.

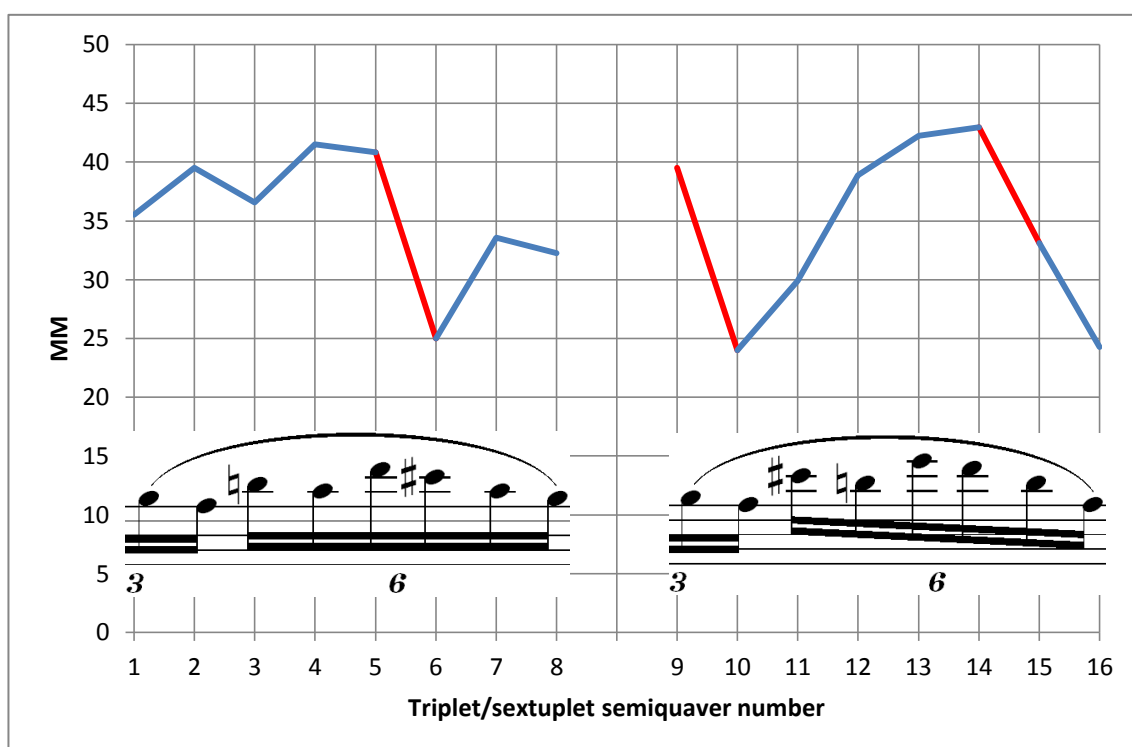


Fig 5.64 Triplet/sextuplet semiquaver data, bb. 69-70, Milstein 1960, Video 5.11.

Each of the red lines represents a sudden lengthening which is the result not of the notes themselves being lengthened in the manner of an agogic accent, but instead of the slower intervening slide.

Martzy makes use of agogic accents on the half-bar in her 1954 recording:

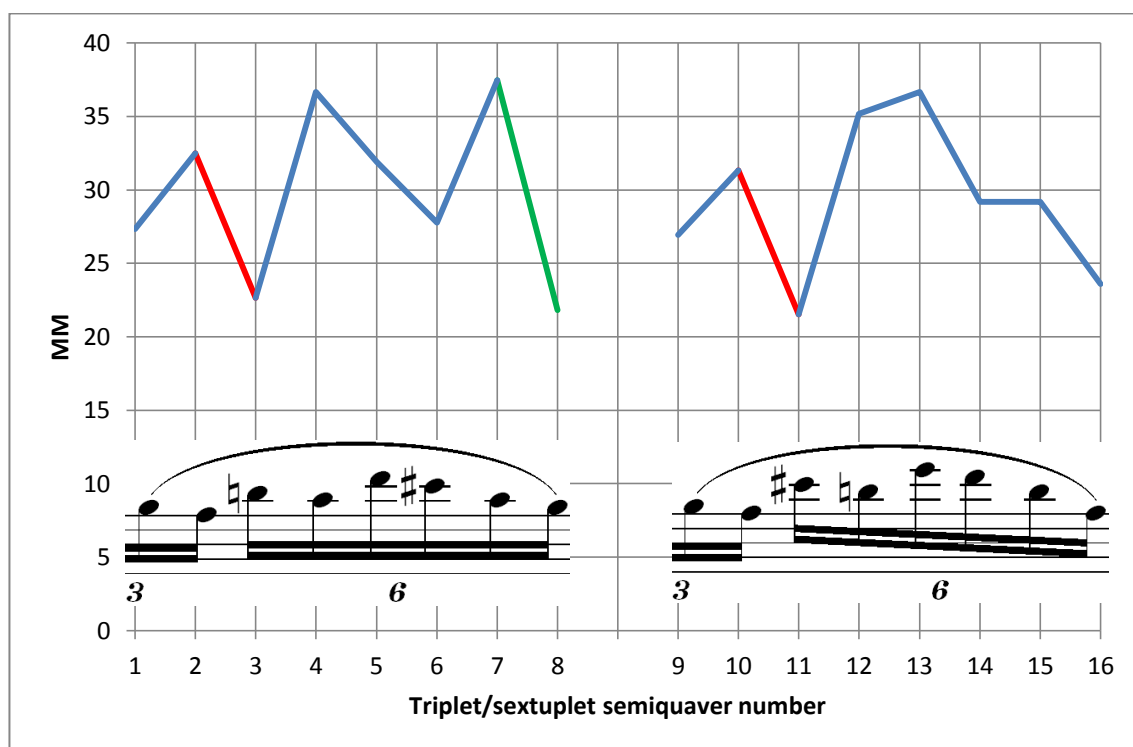


Figure 5.65 Triplet/sextuplet semiquaver data, bb. 69-70, Martzy 1954, Video 5.12.

These agogic accents highlight the wider intervals of a fourth and fifth respectively within the triplet figurations, although Martzy chooses not to join these notes together with a *portamento*. She also considerably lengthens the final triplet of the first group after a quicker penultimate triplet to compensate. This is marked in green on the above graph.

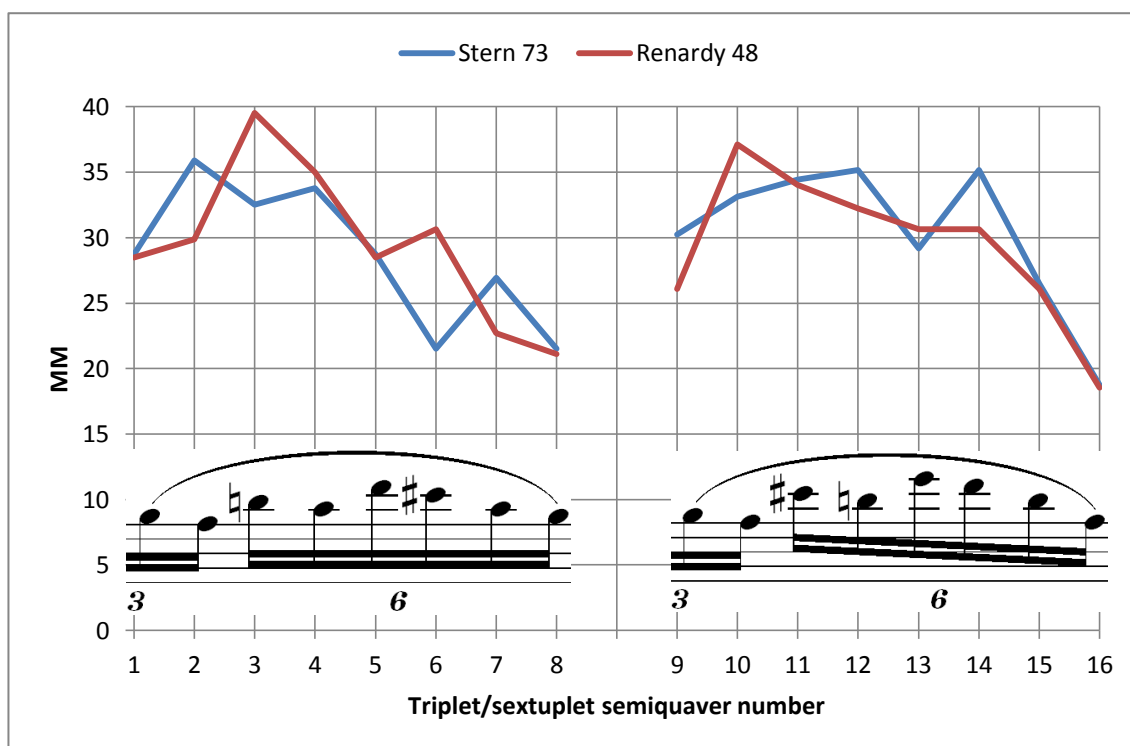


Figure 5.66 Triplet/sextuplet semiquaver data, bb. 69-70, selected performances, Video 5.13

Stern and Renardy both exhibit moderately clear arched shaping, with a 'sloping off' at the end of each group indicating a slowing towards the end of each triplet figure. Within this general shape, Stern also chooses to lengthen triplets numbered 6 and 13 on the graph in the manner of agogic accents. The first of these, C-sharp, provides a resolution to the preceding D-natural, which functions as a dissonant appoggiatura within the context of the F-sharp major harmony, whereas the second, E-natural, represents the melodic peak of the passage.

From bar 71 the orchestral texture thickens considerably as the music builds both dynamically and harmonically, peaking in intensity around bars 73 to 74 before relaxing into the recapitulation at bar 78.

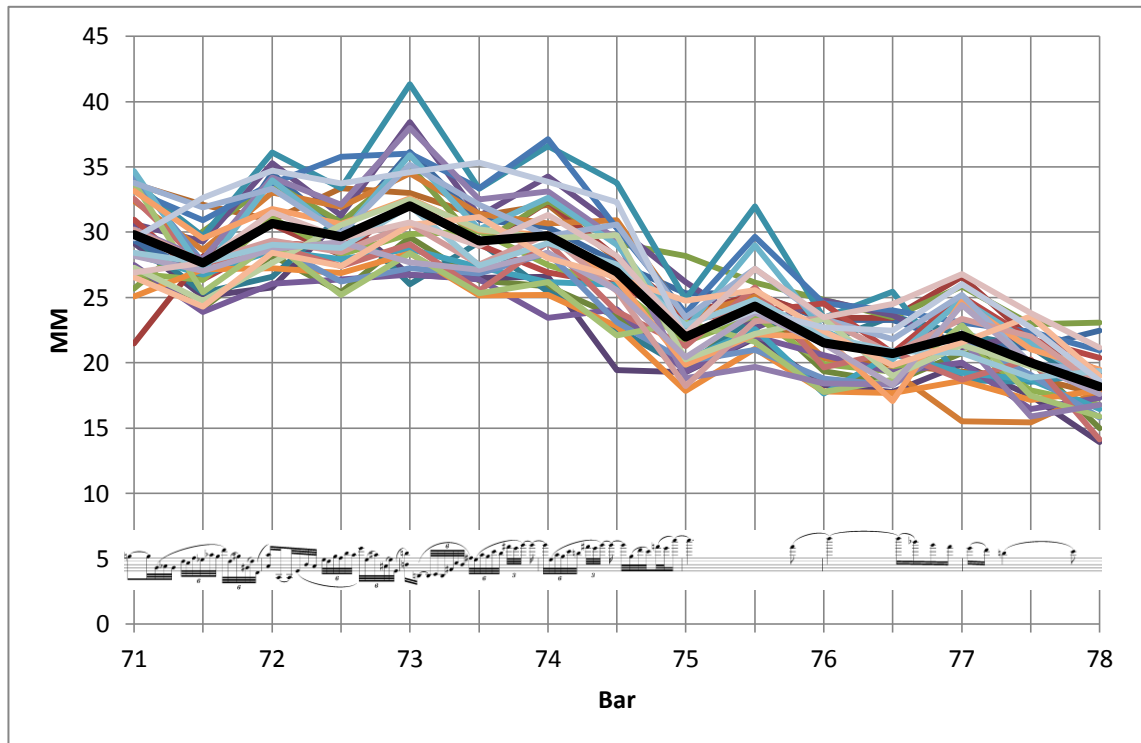


Figure 5.67 Beat data, bb. 71-78, all performances.

The general trend, as demonstrated by the average performance shown in Figure 5.67, is to push the tempo on as the music increases in dynamic and then to begin slowing from around the beginning of bar 73 onwards. This slowing consistently begins well before the notated *calando* marking in bar 75, and players generally begin to relax the tempo whilst maintaining the *forte* dynamic as the music reaches its expressive climax. This approach is demonstrated in the following recordings by Kreisler and Szeryng:

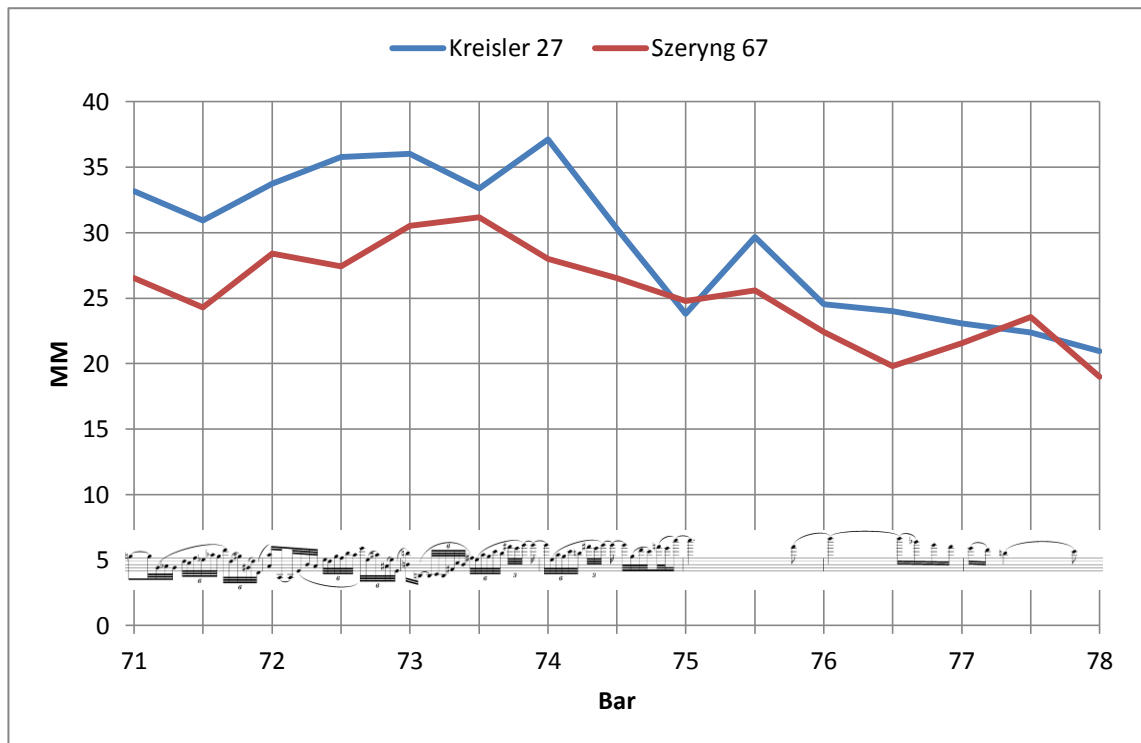


Figure 5.68 Beat data, bb. 71-78, selected performances, Video 5.14.

Huberman, Kogan and Neveu make much more of an *accelerando*, particularly on the second beat of each bar which consists of rapid demisemiquaver triplet figuration in the solo line:

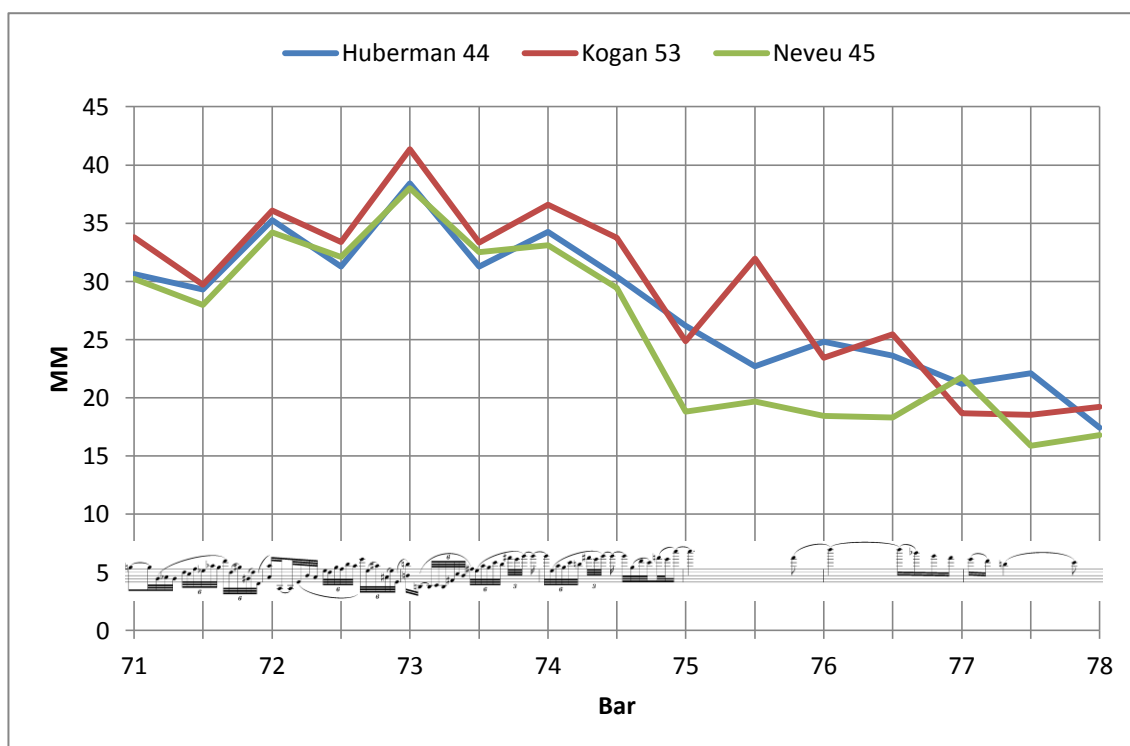


Figure 5.69 Beat data, bb. 71-78, selected performances, Video 5.15.

In almost all of the recordings the vast majority of any *accelerando* takes place on the second beat of each bar, which contains the vast majority of the quicker note figurations. The second and third semiquavers of bar 71 are played in the orchestra while the solo violin holds onto a tied-over quaver so the soloist has very little control over the amount of *accelerando* during the first half of the bar, although a number of performers, in particular Huberman, forge ahead on their own without necessarily waiting for the orchestra. By the first beat of bar 74 he is almost half a beat ahead of the orchestra and is forced to hold onto his tied G at the mid-point of the bar, allowing the orchestra to catch up before he continues.

Francescatti takes a slightly different approach by accelerating a great deal during the second beat of bar 70 so that a new, faster tempo is reached earlier, by the beginning of bar 71:

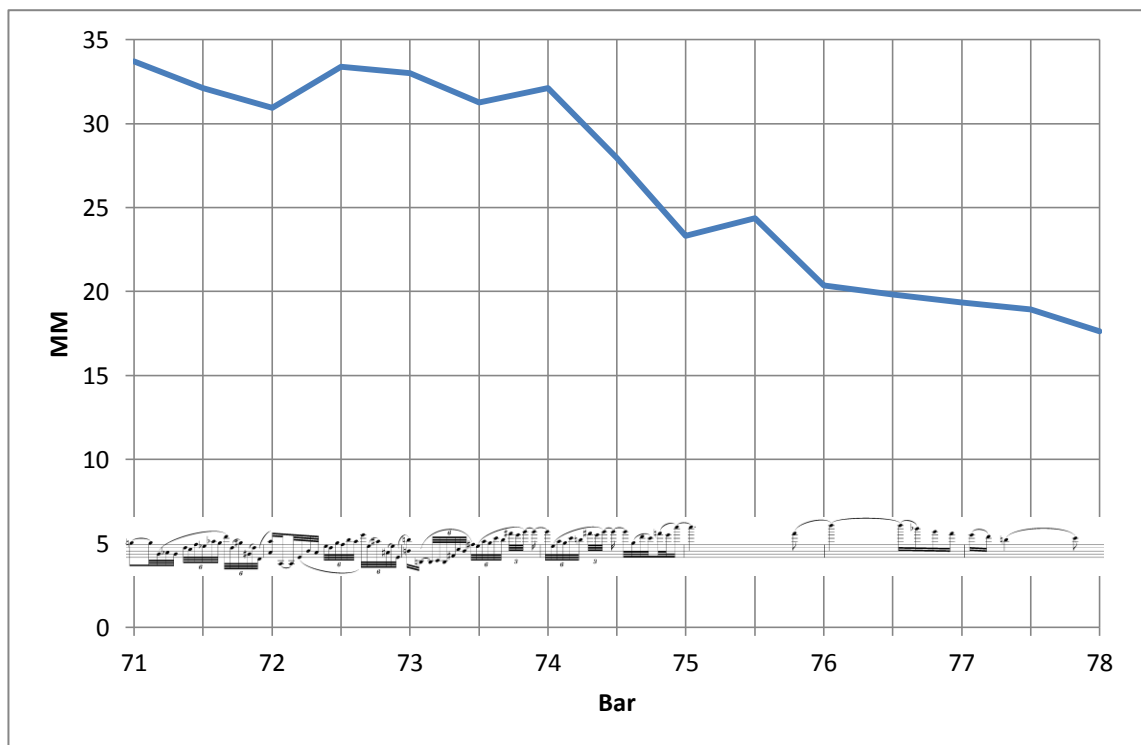


Figure 5.70 Beat data, bb. 71-78, Francescatti 1958, Video 5.16.

Menuhin and Schneiderhan choose not to speed up at all, instead maintaining a fairly steady tempo until the *calando* in bar 75:

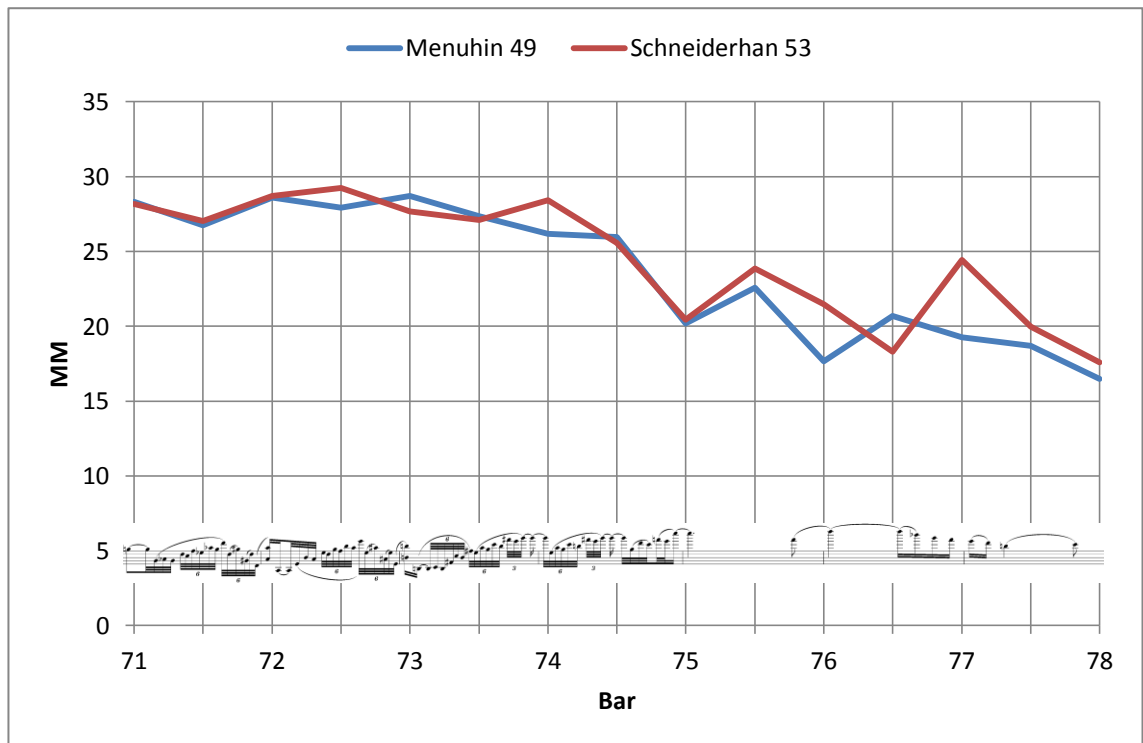


Figure 5.71 Beat data, bb. 71-78, selected performances, Video 5.17.

A number of performers employ some degree of flexibility in their timing of the demisemiquaver triplets in bars 71 and 72 but none to quite the same degree as Ferras in his two recordings.

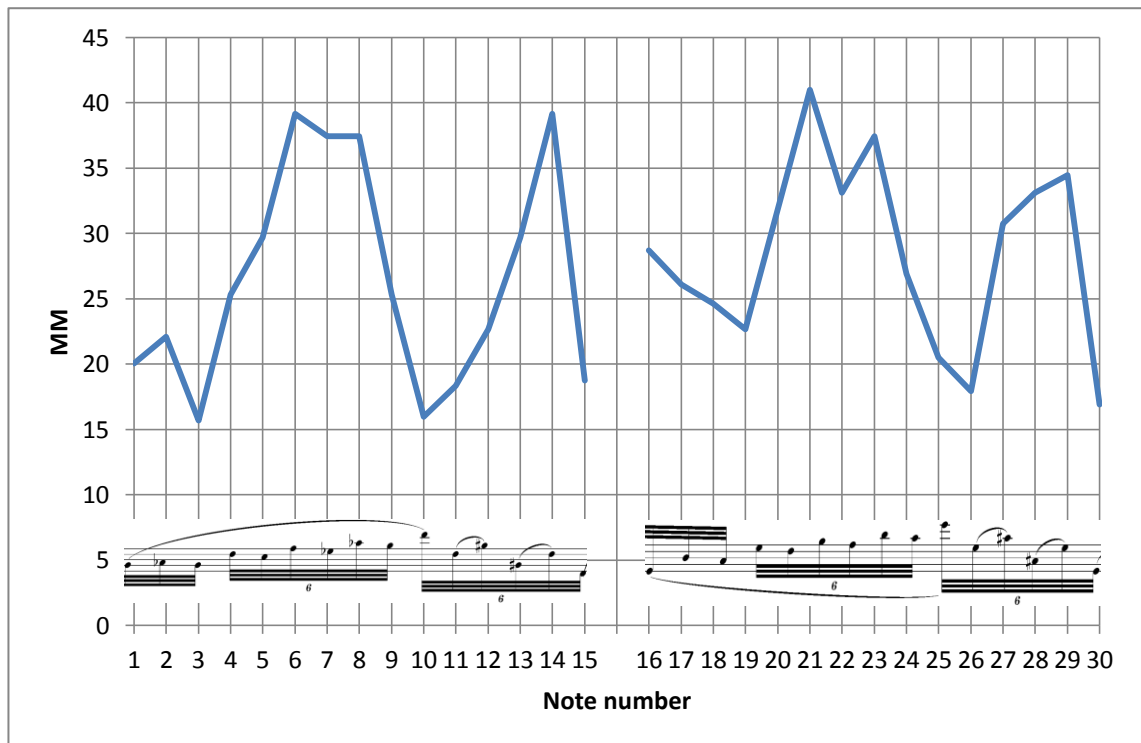


Figure 5.72 Note data, bb. 71-72, Ferras 1953, Video 5.18.

This graph represents both sets of demisemiquaver triplets in his 1953 recording, which shows just how much variation there is in length, the metronome mark calculated for each note ranging from 15.7bpm all the way up to 41bpm. After beginning each group slowly, Ferras shapes the third quaver beat of the bar with a large arch shape, which is the result of a massive *accelerando* followed by an equally rapid *rallentando*, with the effect of highlighting the melodic peak of each bar at the beginning of the fourth quaver beat. Following this he accelerates again towards the octave semiquaver at the beginning of the next bar. The final demisemiquaver triplet of each bar is lengthened due to the fact that Ferras ‘spreads’ the octave chord by sounding the lower note first, in the manner of a grace note, before placing the complete chord on the down-beat of the next bar.

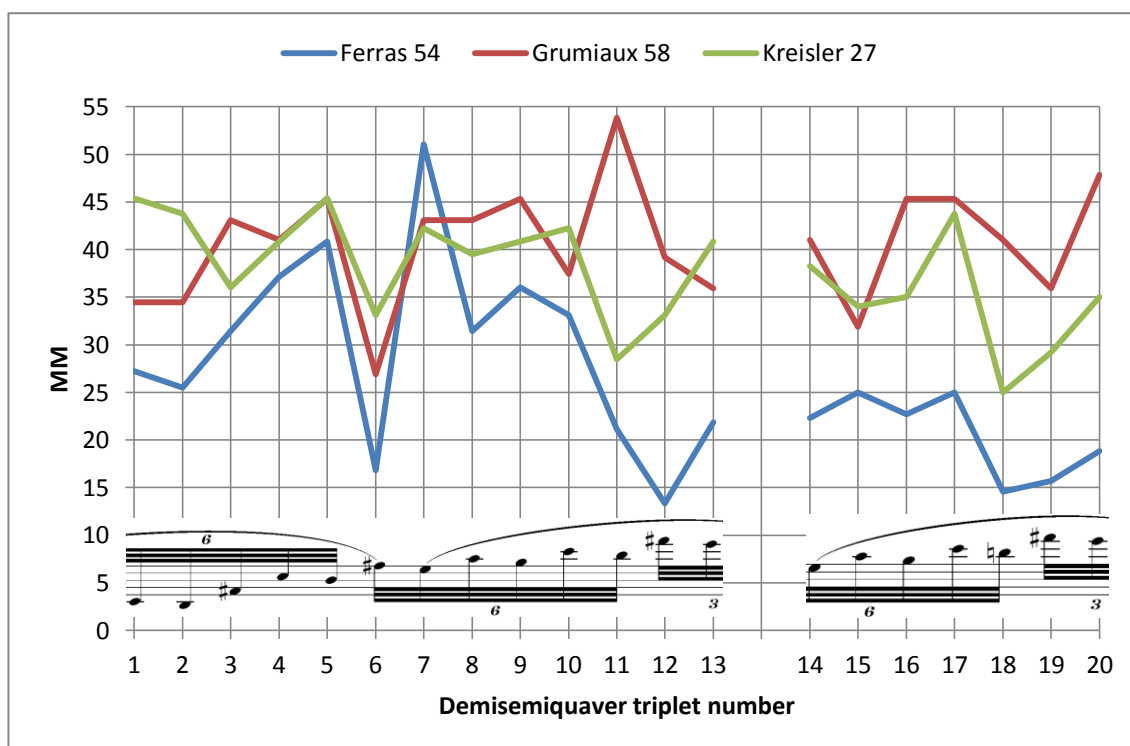


Figure 5.73 Demisemiquaver triplet data, bb. 73-74, selected performances, Video 5.19.

This graph shows three interpretations of the demisemiquaver triplets in bars 73 and 74, where the second group, numbers 14 to 20, are a direct repetition of numbers 7 to 13. Ferras, Grumiaux and Kreisler all place an agogic accent on the F-sharp halfway through bar 73, represented by note number 6. Kreisler plays the repeated figuration almost identically the second time, noticeably lengthening the B-natural each time (notes number 11 and 18). Ferras varies the repetition by using less flexibility the second time and playing all but one of the notes slower, which creates something of a feeling of relaxation following the tempestuousness of his rubato over the preceding bars. Grumiaux's interpretation is rather unusual, as he arrives at the long tied top G early in both instances, effectively changing the rhythm so as to place these longer Gs directly on the fourth quaver beat of bar 73 and the second quaver beat of bar 74. There is no way of knowing whether this is a considered alteration of the notated figuration or an unintentional misreading, but these top Gs coincide so accurately with

the orchestral semiquaver accompaniment that it would be surprising were this not carried out deliberately.

A varied approach is taken with regards to the *diminuendo* and *calando* markings in the score, appearing on the second beat of bar 74 and the first beat of bar 75 respectively. Whereas almost all performers make a gradual *rallentando*, Renardy and Szigeti both switch to a slower tempo rather abruptly on the second beat of bar 74, which coincides with the beginning of the *diminuendo* rather than the *calando* marking:

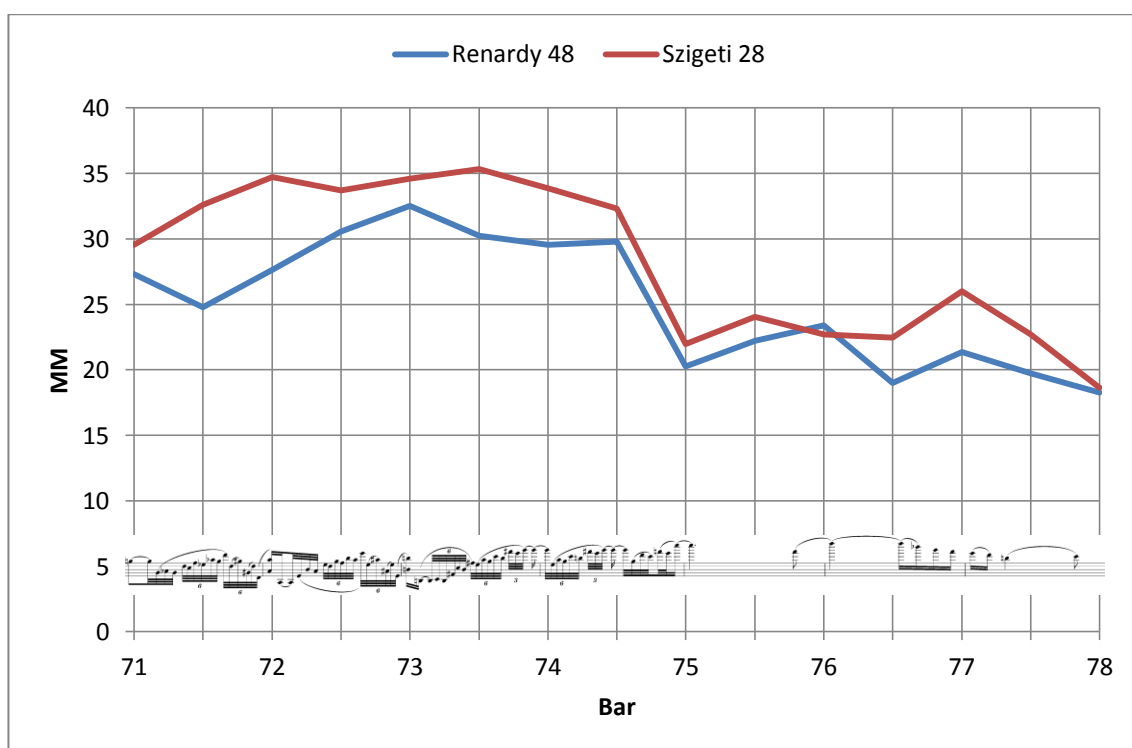


Figure 5.74 Beat data, bb. 71-78, selected performers, Video 5.20.

In bar 75 Kreisler and Neveu both anticipate the last quaver, F, which is slurred onto the top D in the following bar, which represents the melodic peak of the entire

movement. By placing this note slightly ahead of the orchestral accompaniment, a subtle degree of tension is added that subsequently contributes to the sense of arrival on the following D, which is placed exactly in time with the orchestra.

Video 5.21

Menuhin interprets the semiquavers in bars 76 to 77 rather unusually in his 1958 recording, by considerably lengthening the first of each pair to the extent that they sound 'tripletised':

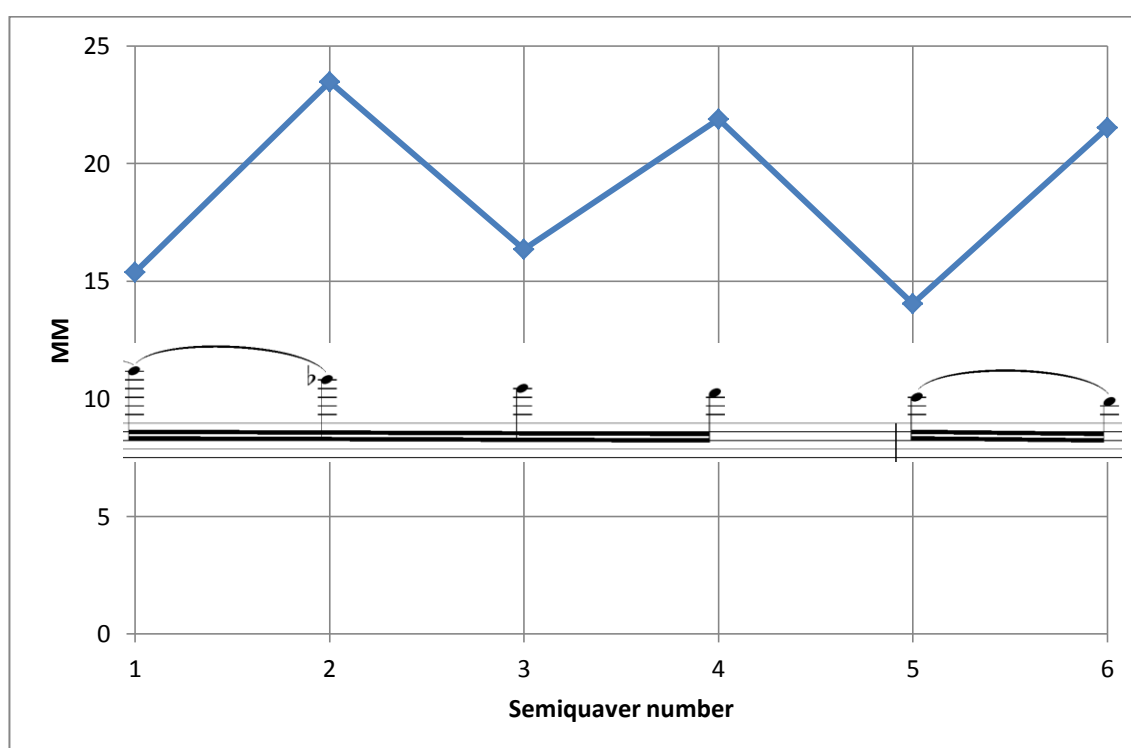


Figure 5.75 Semiquaver data, bb. 76-77, Menuhin 1958, Video 5.22.

This graph begins with the first semiquaver, D, on the second beat of bar 76, which is tied over from the previous crotchet. Because this note is tied over, the onset of the

second beat is controlled by the orchestra rather than the soloist, although it has been included here as this is certainly a point in the music when the soloist must wait for the orchestra, whatever their own intentions might be with regards to rubato.

When the recapitulation begins in bar 78 the solo violin plays an accompanying role for the first time in the movement, with a sextuplet octave figuration over the oboe melody. Following two bars of this, the soloist takes over again with a slight variation of the first solo entry from bars 32 to 34, before the oboe regains the melody and the soloist continues with the sextuplet accompanying figure until the next orchestral tutti begins in bar 87.

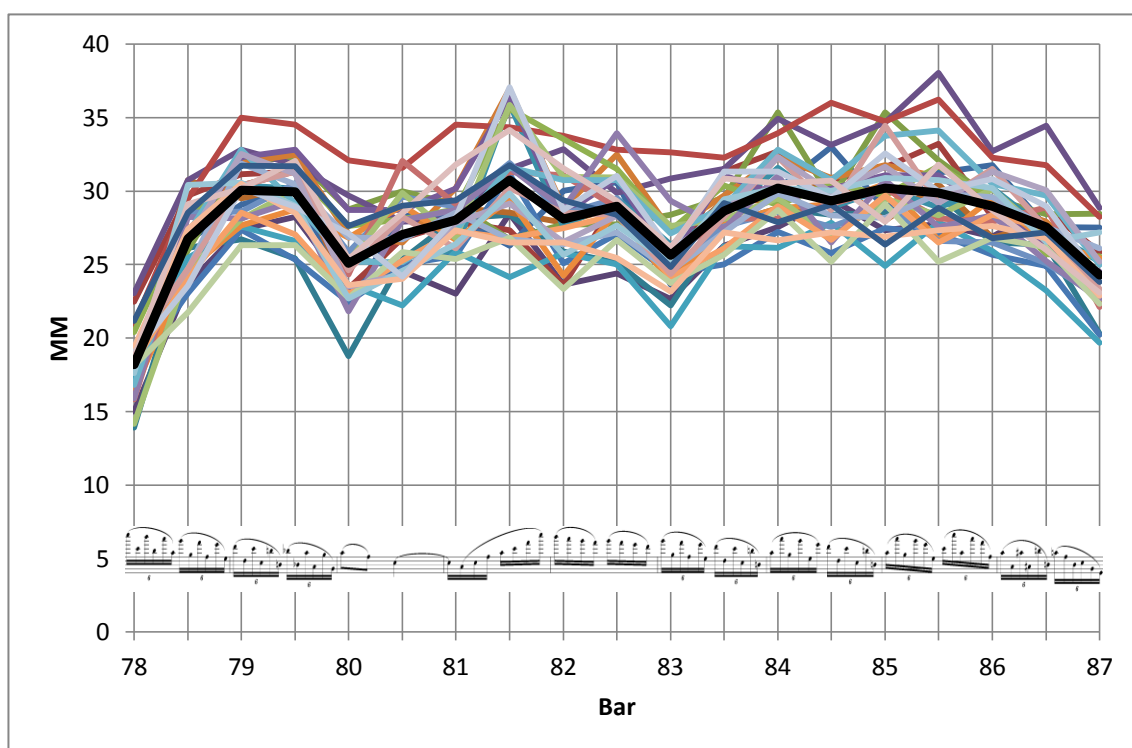


Figure 5.76 Beat data, bb. 78-87, all performances.

There is a clear trend to mirror this 2+3+4 bar structure by shaping each phrase using rubato, as can be seen in the average performance above. Ferras, Neveu and Szigeti shape the passage most smoothly, which is reflected in the regular arch shapes on the tempo graph:

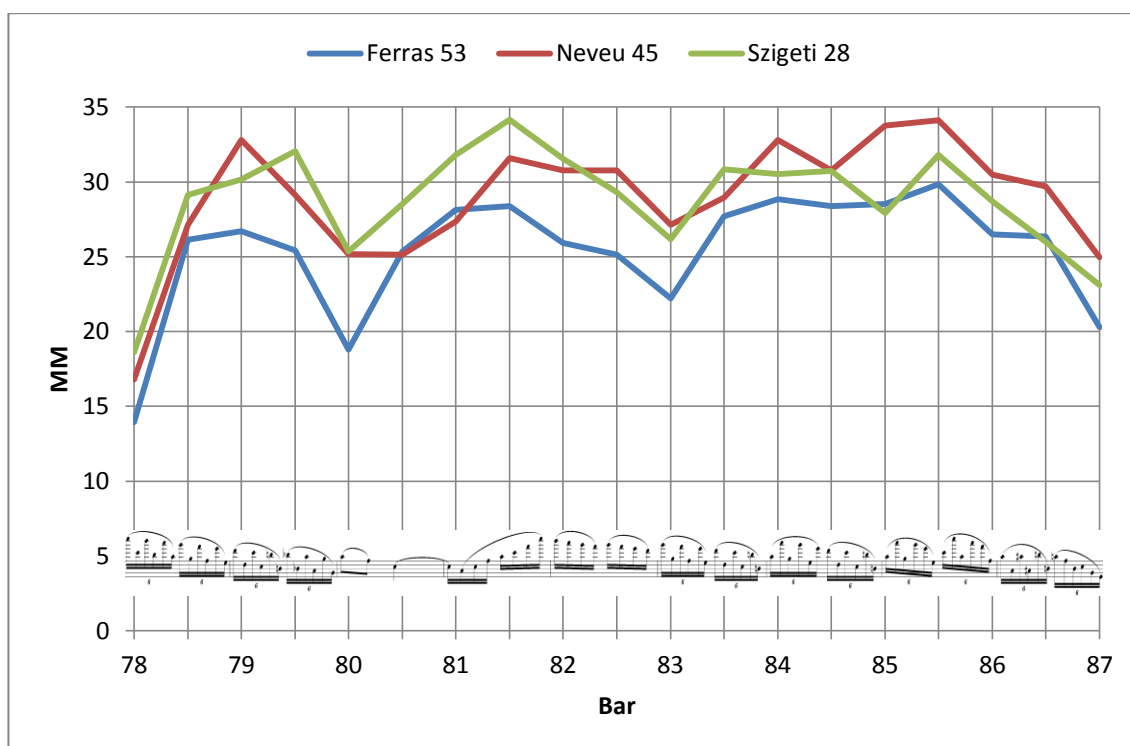


Figure 5.77 Beat data, bb. 78-87, selected performances, Video 6.01.

A number of performers choose to make a big feature of the extended interval of a fifth at the end of bar 81, which is the only difference between this three-bar phrase and bars 32 to 34. Almost every recording exhibits some kind of a *portamento* up to the C on the last semiquaver of bar 81, which is further highlighted by means of rubato in a number of performances.

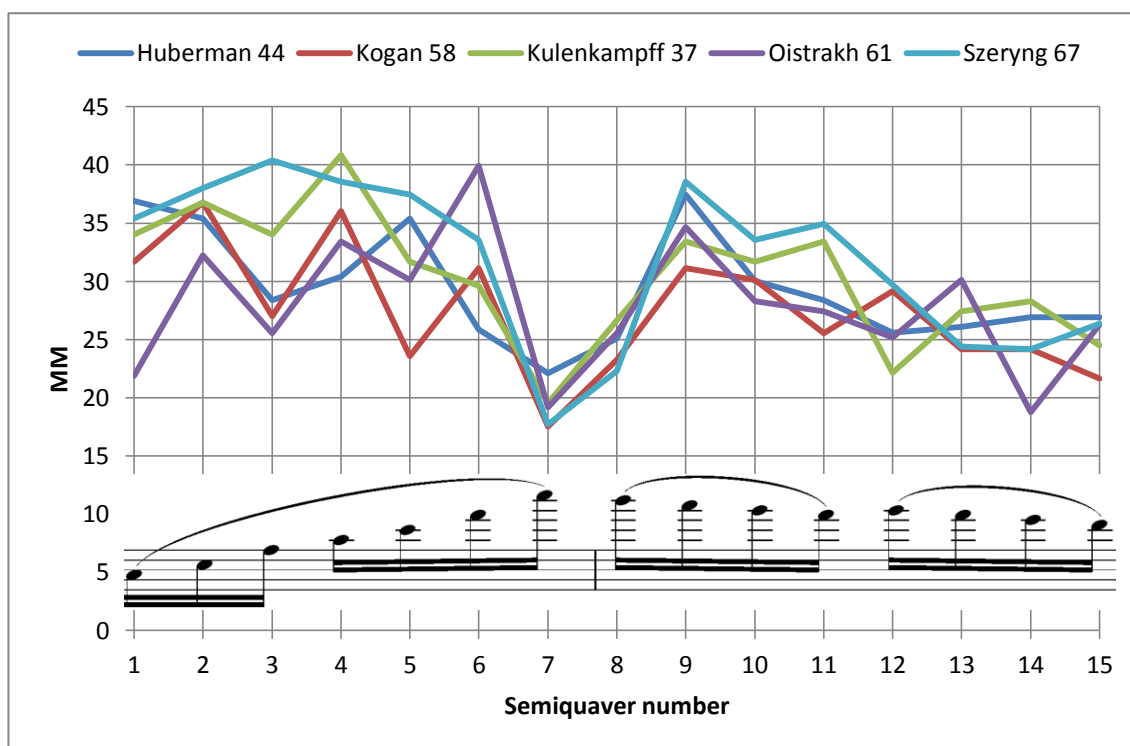


Figure 5.78 Semiquaver data, bb. 81-82, selected performances, Video 6.02.

The five performers in Figure 5.78 all use rubato slightly differently in order to highlight the melodic peak on the last semiquaver of bar 81:

Szeryng lengthens his top C considerably, although he prepares for this by easing in tempo slightly during the preceding notes. After a shorter but still substantial agogic lengthening of the following B-flat on the downbeat he immediately returns to the quicker tempo before easing off again towards the end of bar 82. Szeryng's shaping of the passage is by far the smoothest when compared to the other four, as reflected in the regularity of his tempo contour. Other performers chose to highlight other smaller musical details using rubato in addition to the melodic peak, which results in less regular patterns on the tempo graph.

Kulenkampff takes a similar, if slightly more uneven approach although he chooses to add an additional agogic accent to the G on the second beat of bar 82.

Kogan's approach to the melodic peak is rather unusual in that he lengthens all of the weaker semiquavers, resulting in the dramatic, zig-zagging pattern on the graph. The discrepancy in note length effectively 'tripletises' the semiquavers, as Menuhin does in bars 76 to 77, only this time it is the weaker notes of each pair that are lengthened. This could be seen as a way of preparing the long agogic accent at the top C peak, in that the lengthening of this weak semiquaver does not occur unexpectedly, but instead comes at the end of a pattern of lengthening that prevails throughout the rest of the bar. Although this effect of adding emphasis to weak semiquavers by way of agogic accents is rather unusual, Kogan adds a different kind of expressive emphasis to the shorter, stronger semiquavers by adding *vibrato* to them and leaving the weaker semiquavers 'clean'. This distracts somewhat from the off-beat lengthening that is occurring and restores some degree of overall expressive balance to the semiquavers.

Oistrakh also lengthens the weaker semiquavers in bar 81, although to a lesser extent than Kogan. Whereas Kogan's agogic accents get progressively longer through the bar, Oistrakh does the opposite by speeding up and then slowing suddenly on the C peak, following an extremely short preceding semiquaver. He also emphasises the change in harmony on the final quaver beat of the bar, which represents a further point of departure from the equivalent passage in the exposition, by lengthening the penultimate semiquaver.

Huberman takes extra time over his two upward *portamenti* in bar 81, which arrive at notes number 3 and 6. He shapes the other semiquavers around them before lengthening the peak notes 7 and 8 even more. Kulenkampff takes a similar, if slightly

more uneven, approach to Szeryng, although Kulenkampff chooses to add an additional agogic accent to the G on the second beat of bar 82.

The sextuplet accompanying figure that comprises the solo violin line in bars 78 to 79 and 83 to 86 is performed relatively simply in most recordings, as one might expect given that the soloist's role in this passage involves little more than providing decoration to the oboe solo. However, a few performers approach this accompanying passage in a rather more soloistic manner. In bars 83 to 84 Heifetz pushes on through the second beat of each bar, as if urging on the lyrical oboe melody rather than complementing it.

Video 6.03

Oistrakh makes particular use of agogic accents from bars 83 to 86, with significant lengthening of the first sextuplet in bars 83, 84 and 85, as well as the second beat of bar 86:

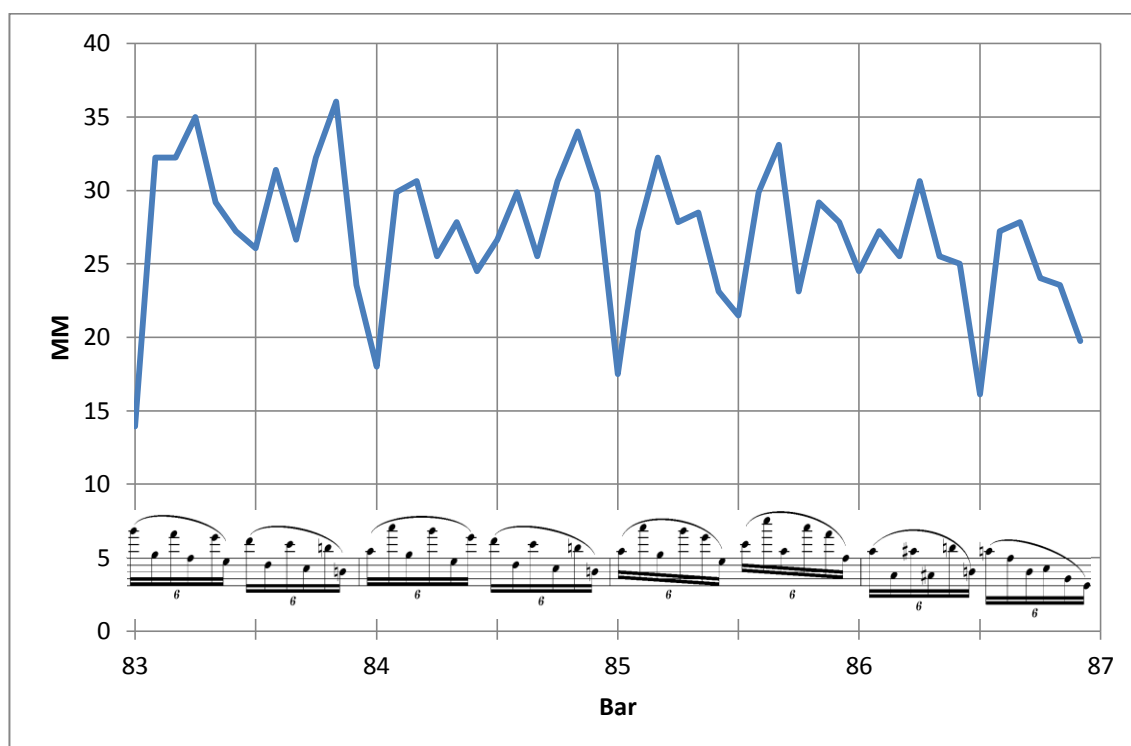


Figure 5.79 Sextuplet semiquaver data, bb. 83-87, Oistrakh 1970, Video 6.04.

A number of performers introduce some element of rubato around the end of bar 85, which represents the dynamic peak of the phrase, following a small *crescendo*.

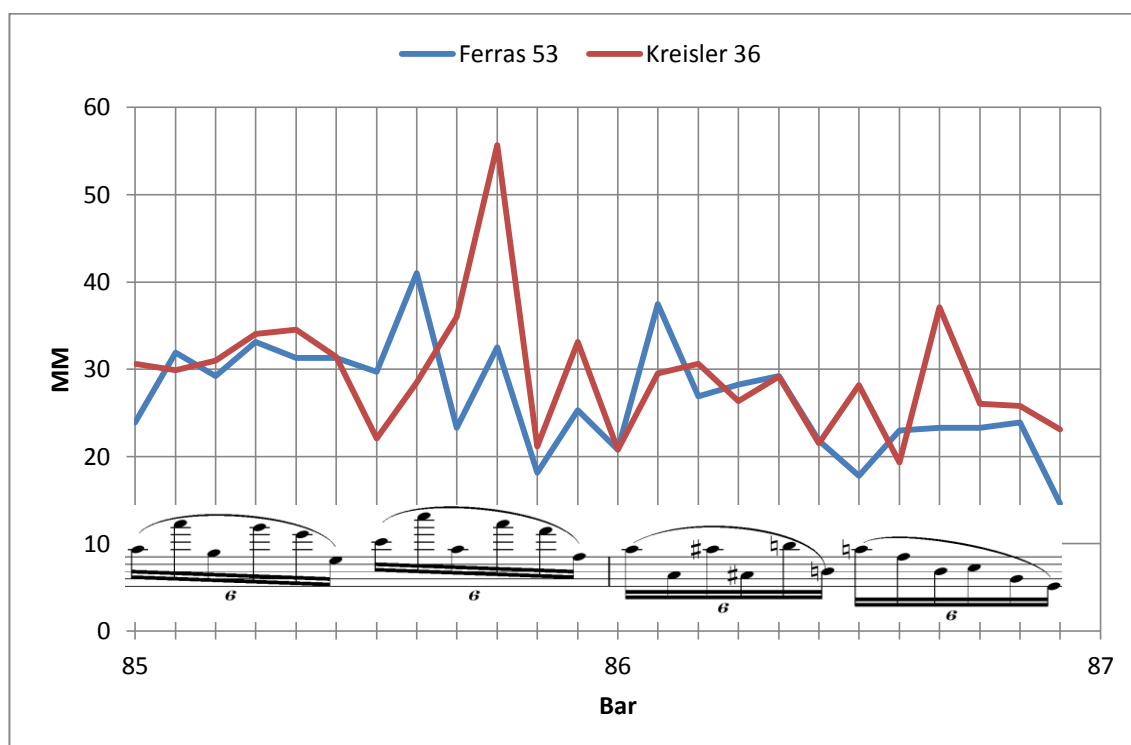


Figure 5.80 Sextuplet semiquaver data, bb. 85-87, selected performances, Video 6.05.

After playing the first six notes fairly evenly, Kreisler lengthens the C on the half-bar in the manner of an agogic accent before dramatically speeding up through the next three notes, particularly shortening the third. This ‘borrows’ time for the particularly slow and prominent *B-portamento* that follows, spanning the octave at the end of the bar. Kreisler then adds an agogic accent to the A at the beginning of bar 86 and takes extra time over two further *portamenti*, up to the A on the half-bar which he plays as a harmonic and down to the B-natural two notes later. With the second of these *portamenti*, he makes up time after the slide rather than before it by shortening the B-natural ending note, unlike the slide at the end of bar 85 which is compensated for in

advance. In both cases, however, the note lengths are altered so considerably that it is heard as a dotted rhythm...



Figure 5.81 Rhythmically-altered sextuplet semiquavers, bb. 85-86, as performed by Kreisler 1936.

...rather than the even sextuplets that are notated in the score.



Figure 5.82 Sextuplet semiquavers as they appear in the score, bb. 85-86.

Ferras takes a slightly different approach to rubato with regards to his *portamento* spanning the F octave at the end of bar 85. After beginning the bar similarly evenly, Ferras 'zig-zags' towards the *portamento* and an agogic accent on the first beat of bar 86 by successively lengthening the first of each pair of sextuplets. The difference between consecutive note lengths is not as great as in Kreisler's recording but still sufficient to give the sextuplets an uneven, triplet feel:



Figure 5.83 Rhythmically-altered sextuplet semiquavers, bb. 85-86, as performed by Ferras 1953.

3.7 Bars 90 to 102

The following section, comprising the next solo entry following a brief four-bar tutti and leading up to the start of the coda, represents the climax of the movement as a whole. There are precious few dynamic and expressive indications from Brahms, the only three being an *espressivo poco a poco crescendo* marking at the beginning of bar 90, *espressivo dolce* at bar 98 when the music reaches its melodic and expressive climax and a short *crescendo* and *diminuendo* contained within bar 102. It is important to note that, although MM values are given for every beat in this section, there are a number of beat onsets that are determined by the orchestral texture rather than the soloist. In bars 93 to 97 and bar 101 the solo violin has notes held over the second beat of each bar and in bar 98 the first beat is held from the previous bar. In these cases it is the orchestra's onset times that have been measured. This does not render subsequent analysis of the soloist's musical timing less valid, however, as the overall texture, particularly in the case of bars 95 to 97 is clearly dominated by the shorter sextuplet semiquaver figuration of the solo line.

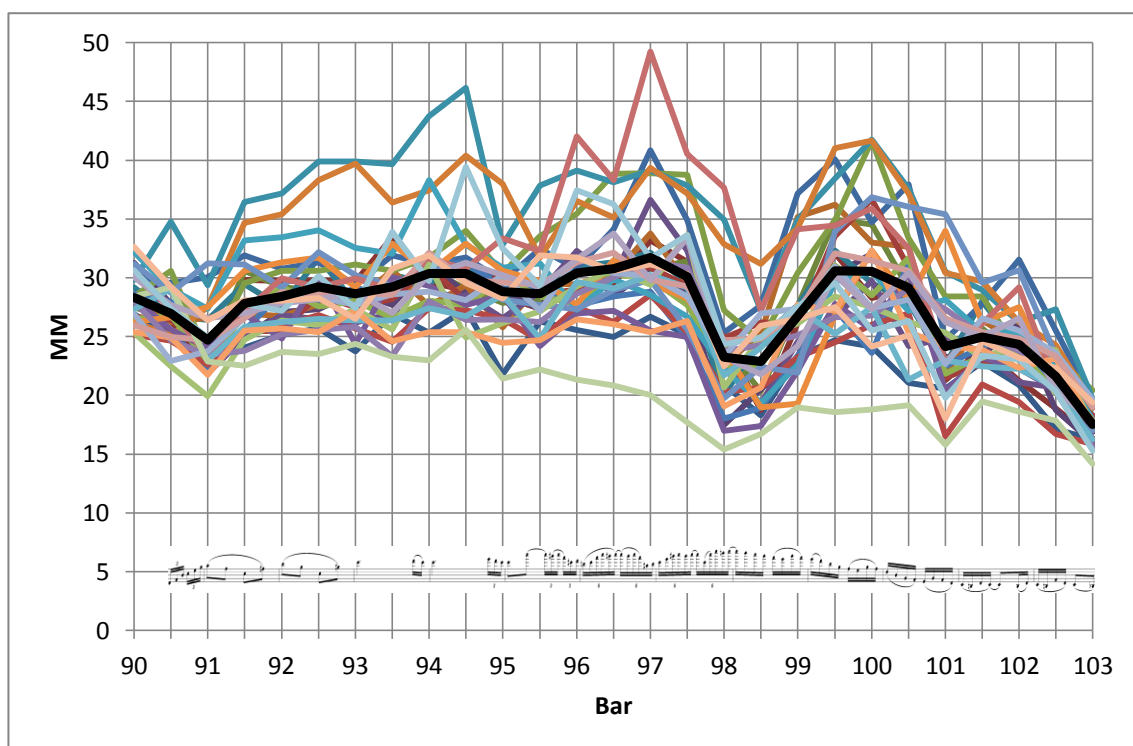


Figure 5.84 Beat data, bb. 90-103, all performances.

As was established earlier, there is far more deviation in timing through this section than any other point in the movement. Although a clear tendency can be seen to slow down into the *espressivo* climax at bar 98 before returning to tempo, there is evidently a lot of variety elsewhere in the passage. The unaccompanied cadenza-like passage, beginning half-way through bar 98 and ending when the orchestra re-enters in bar 101, is particularly inviting in terms of rubato, as the soloist is left completely free to apply flexibility without any concerns of ensemble.

There are four main points during this passage where slowing commonly takes place, of which the first two are by far the most predictable. Every one of the thirty recordings exhibits a slowing on or just before the aforementioned *espressivo* climax at the start of bar 98, as well as the second beat of bar 102 which leads into the coda, in

spite of the fact that the score offers no markings at either of these points pertaining to tempo.

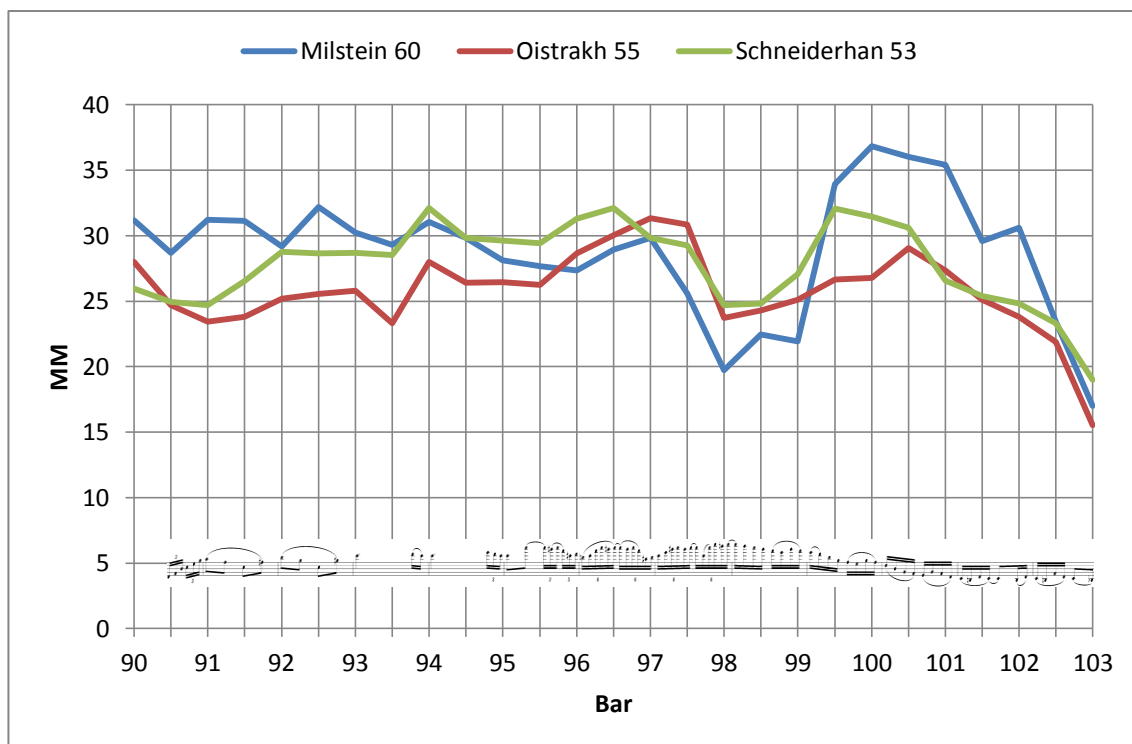


Figure 5.85 Beat data, bb. 90-103, selected performances, Video 7.01.

Milstein, Oistrakh and Schneiderhan shape their performances into a 7+5 bar structure around these two 'centres of gravity' on the second beat of bars 97 and 102, with a relatively smooth tempo arch linking the two.

The other two points are not of any great structural importance in the context of the movement as a whole but are highlighted in a considerable number of performances. The more common of the two comes on the second beat of bar 100, when the solo violin moves over to the G-string, just before the orchestras re-enters at the beginning of the following bar. Eighteen of the thirty recordings exhibit an often-considerable

slowing at this point, most noticeably in the following five recordings by Grumiaux, Heifetz, Martzy and Neveu:

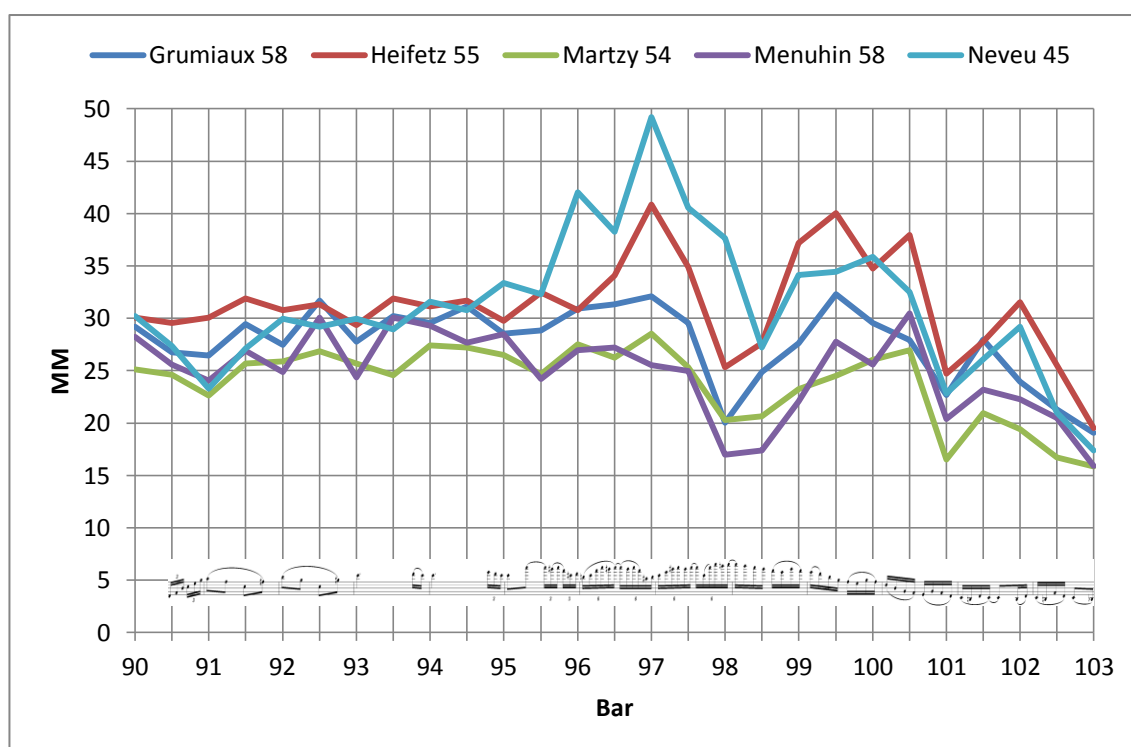


Figure 5.86 Beat data, bb. 90-103, selected performances, Video 7.02.

These recordings demonstrate a 7+3+2 bar structure, with the additional focal point of bar 100, beat 2, although the degree of slowing at each point differs greatly between performances. Neveu's slowing at the *espressivo* happens a beat later than most, with the longest beat occurring on the down-beat of bar 98 rather than just before, which is also the case in Kogan, Kreisler and most of Milstein's recordings.

The final 'rubato hotspot', around the end of bar 94 going into bar 95, is highlighted in 13 recordings and represents a powerful perfect cadence in the tonic F major. Bars 93 and 94 stand out somewhat from the rest of this section's solo violin writing in their simplicity and the sustained C-natural dotted crotchets that soar over the solo horn

melody afford a rare moment of expressive release in the midst of the complex triplet and demisemiquaver figuration that pervades much of the movement.

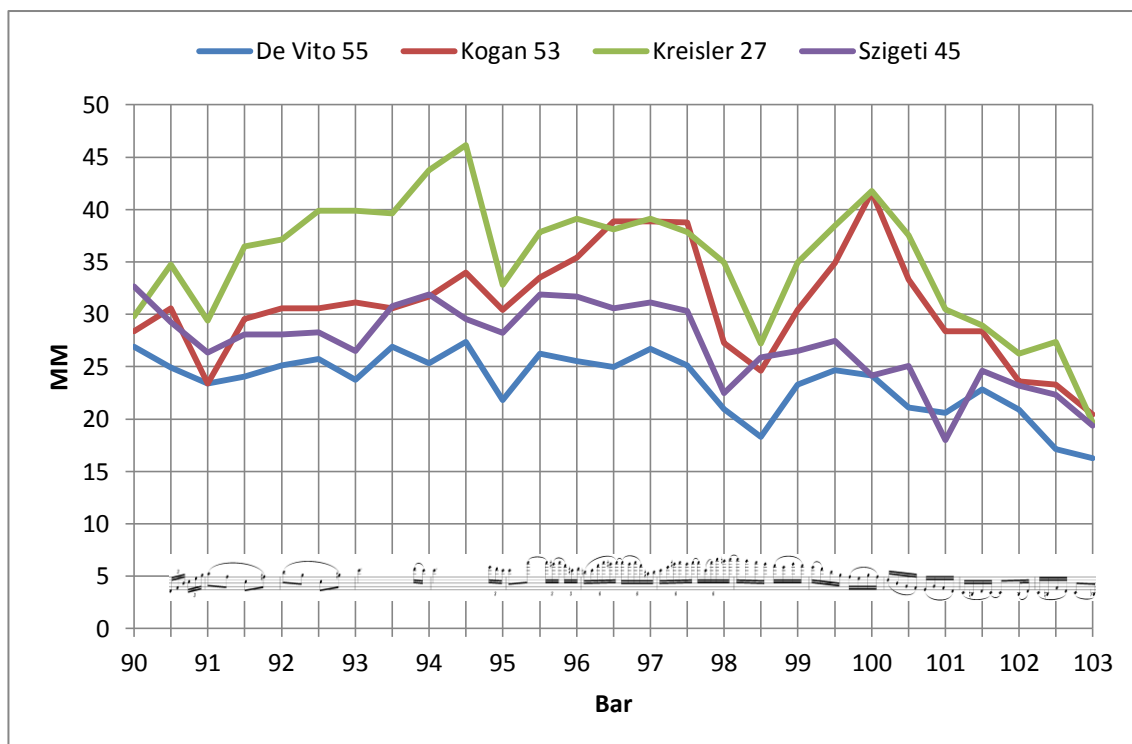


Figure 5.87 Beat data, bb. 90-103, selected performances, Video 7.03.

All four of these performances exhibit a different degree of slowing on the second beat of bar 94, the most sudden and substantial of which appears in Kreisler's 1927 recording. Kreisler pushes the tempo on considerably through bars 90 to 93, at which point the solo horn continues the momentum before Kreisler suddenly pulls back during the triplet semiquavers at the end of bar 94. Kreisler anticipates the first triplet, E, placing it well before the horn's final quaver of the bar, which allows him more time to lengthen the note before playing the last two triplets much more quickly. Heifetz, Huberman and Menuhin also make use of an anticipated and lengthened E triplet, although they compensate to a greater degree so that the second beat of the bar maintains the general tempo. De Vito, Kogan and Szigeti and De Vito play their triplets

more equally than Kreisler's and there is a general broadening across all three, especially in De Vito's recording.

Along with these anticipations of the E triplet in bar 94 there are a number of other instances of individual notes arriving early, for example the F-sharp on the last quaver of bar 91 in Kulenkampff's 1937 recording.

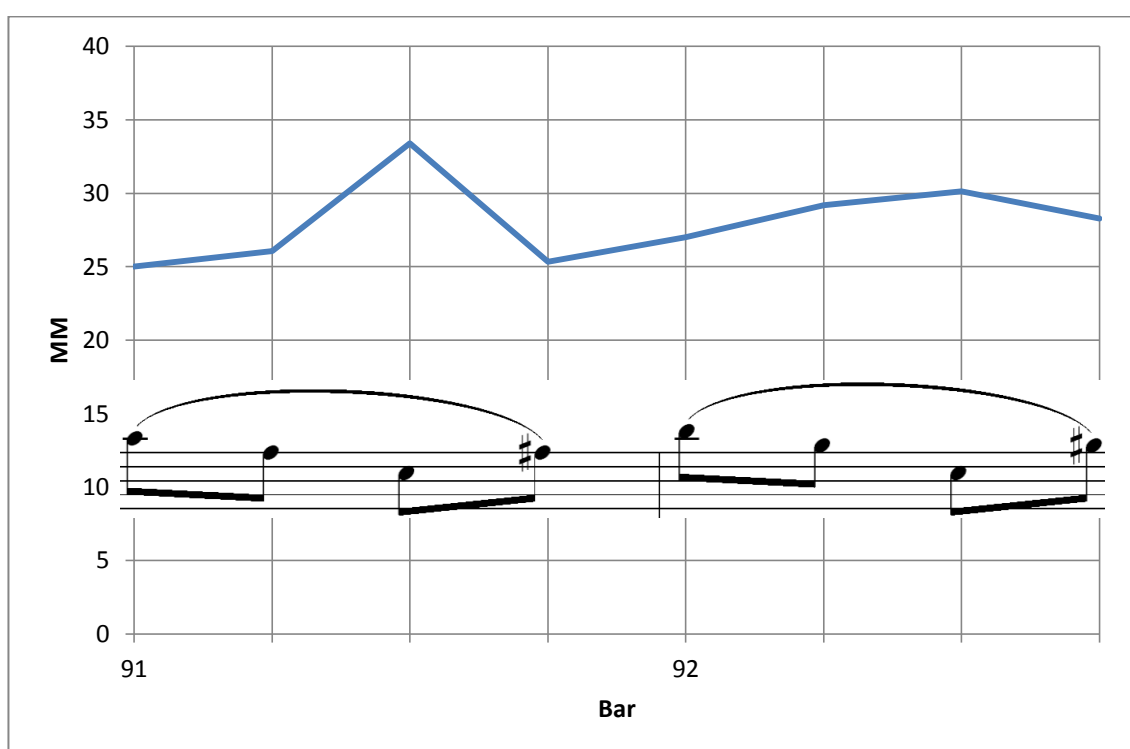


Figure 5.88 Quaver data, bb. 91-92, Kulenkampff 1937, Video 7.04.

The F-sharp is arrived at by means of a prominent single-finger *portamento* well before the change of bass note that occurs in the orchestra on the same quaver beat, which has the effect of emphasising the expressive interval of an augmented fourth between the C and F-sharp quavers.

In addition to Szigeti's anticipation of the E in bar 94 in his 1945 recording, he does the same the bar before and plays the D semiquaver well before the horn arrives at its fourth quaver of the bar. All of these anticipations heighten the musical tension in their respective contexts by creating a sense of unease, as if the player is so compelled towards a note that they are not willing to wait for the orchestra.

The triplets and sextuplets in bars 95 to 97 are treated with a degree of flexibility by a number of performers, although there is a huge amount of variety in the approach by different performers, which goes some way in explaining the relative 'messiness' of Figure 5.84 around this section of the graph.

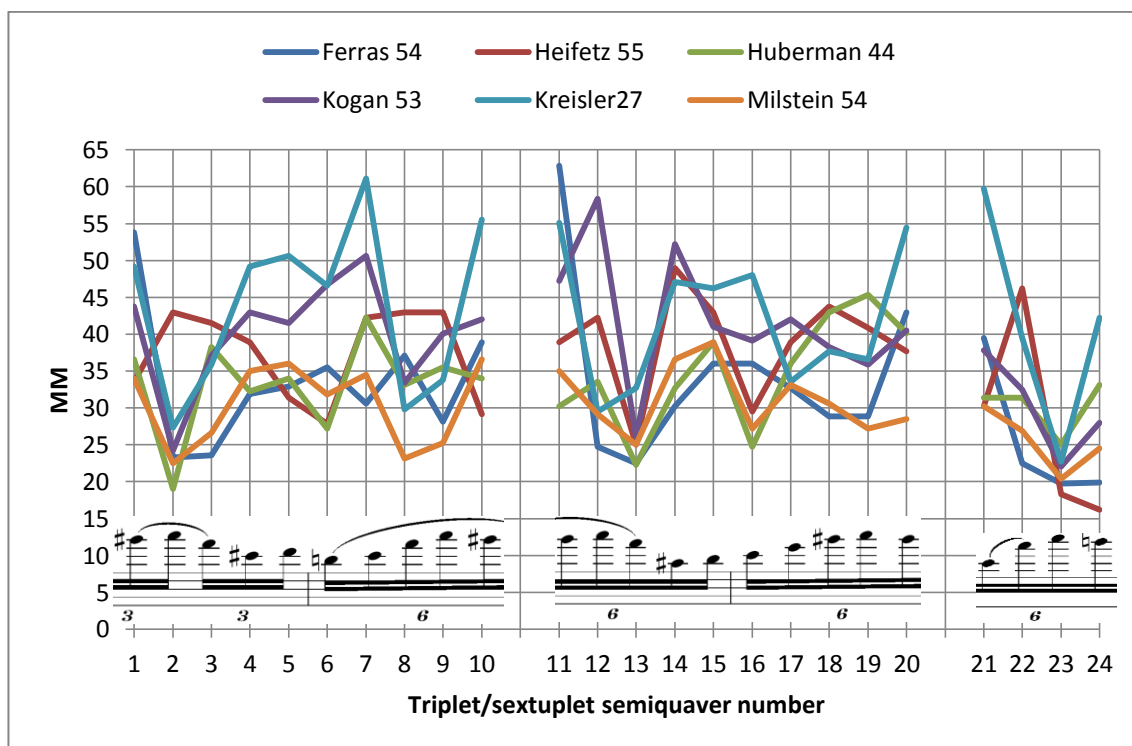


Figure 5.89 Triplet/sextuplet semiquaver data, bb. 95-97, selected performances, Video 7.05.

This graph shows MM for each individual triplet/sextuplet in bars 95 to 97 as they are performed in six of the most flamboyant renditions of this passage. The variety in note length is massive in some cases, with Ferras' notes ranging in MM from 19.8 bpm all the way up to 62.8. The three most common points for slowing are notes number 2, 13 and 23, although each of these performers takes a markedly different approach to rubato, as reflected by the disparity between lines on the graph. In all cases, however, their use of rubato is the result of highlighting *portamento*, agogic accents or small-scale rhythmic alteration.

All six players make use of *portamenti* in this passage, however Heifetz does not use rubato to draw attention to his expressive slides until the penultimate sextuplet (number 23), choosing instead to shape his triplets and sextuplets around agogic accents on note numbers 6, 13 and 16, as well as broadening considerably at the end for notes 25, which is arrived at by means of an upward slide, and 24.

Ferras and Kreisler play the first G-sharp triplet in bar 95 (note 1) extremely quickly in preparation for considerably lengthening the following two, which are connected by a slow downward *S-portamento*, with *vibrato* being added during the course of Ferras' slide. They do exactly the same at the equivalent point in the following bar and also broaden note 23, with a *portamento* akin to Heifetz's.

Kogan and Huberman similarly shorten the first G-sharp triplet in bar 95, thus allowing more time for a downward *portamento*, although the difference in note length is not quite as severe as in Ferras and Kreisler's recordings. In the next bar, however, Kogan and Huberman place their slides a note later, between the F and the A-sharp (notes 13 and 14). Milstein and Huberman take time over multiple *portamenti* throughout the passage, although they do not shorten the surrounding notes to the same degree as

the other performers. Huberman also lengthens the downbeat sextuplets in bars 96 and 97 with agogic accents.

In addition to the use of agogics and *portamento*, Kreisler and, to a lesser extent, Ferras and Milstein noticeably alter the rhythm in bars 96 and 97 by shortening notes 10, 20 and 24, which represent 'lower neighbour' notes preceding a longer tied note. Normally the shortening of individual notes takes place in order to compensate for a longer note elsewhere; however, these notes all precede a longer tied note so the shortening is arguably unnecessary. Instead of compensation, this would appear instead to be done purely for its rhythmic effect. Alternatively, just as notes of importance can be highlighted by means of an agogic accent, this could be a case of the opposite; the decorative lower neighbour notes could conceivably be shortened so that the upper, 'more important' note can be returned to as quickly as possible.

As has already been discussed, the most common approach to this section as a whole is to build up momentum to some degree from bars 90 to 98, where the music reaches its climax and most players broaden out before returning to tempo, such as in the following performance by Francescatti:

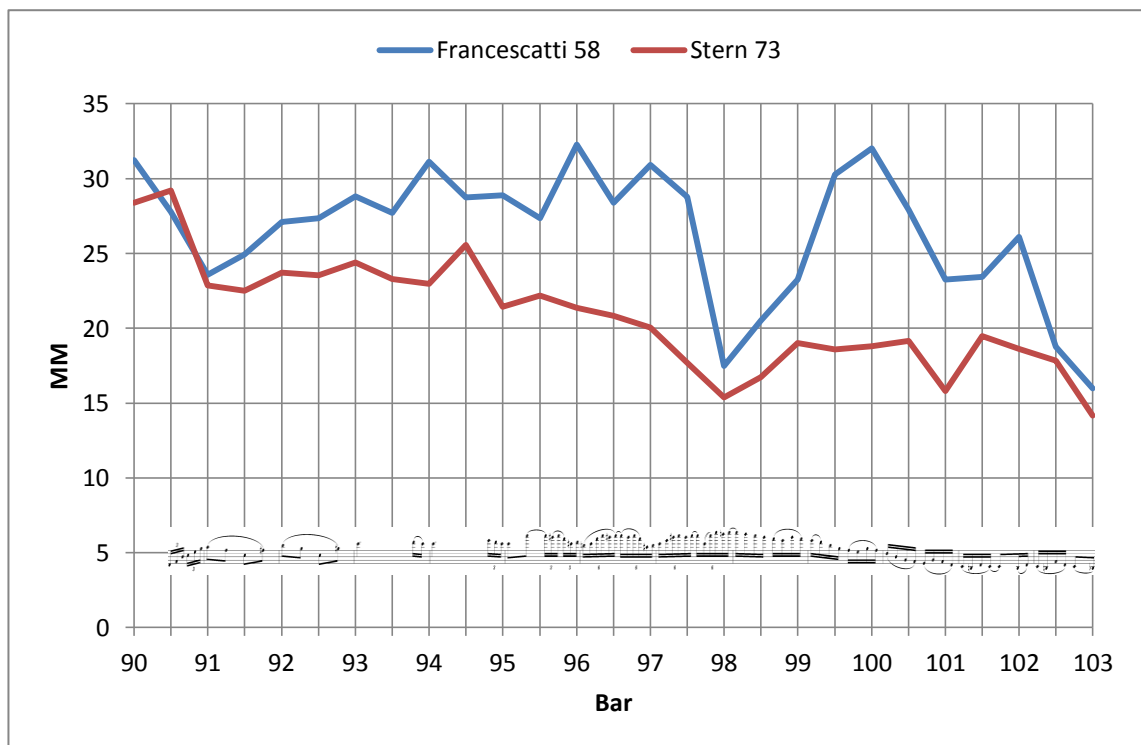


Figure 5.90 Beat data, bb. 90-103, selected performances, Video 7.06.

Stern, however, stands out entirely from the norm with his 1973 performance, not only because his general tempo for the section is far slower than everyone else, but because he begins to broaden extremely early, as far back as bar 94 following only the slightest of *accelerandi* from bar 90 to 93. Following the prolonged broadening, Stern only accelerates ever so slightly in bar 98 and remains at a much slower tempo for the rest of the section. This lack of *accelerando* provides nothing by way of compensation, creating the sensation of the music ‘winding down’ from bar 94 onwards, which lends the subsequent *espressivo dolce* climax a much more relaxed feel than in other recordings.

The passage from bar 98 to 103 represents a transition from the movement’s climax through to the relative tranquillity of the coda. The soloist is entirely unaccompanied

for bars 99 to 101 and elsewhere the orchestral texture is relatively sparse, affording much freedom for rubato.

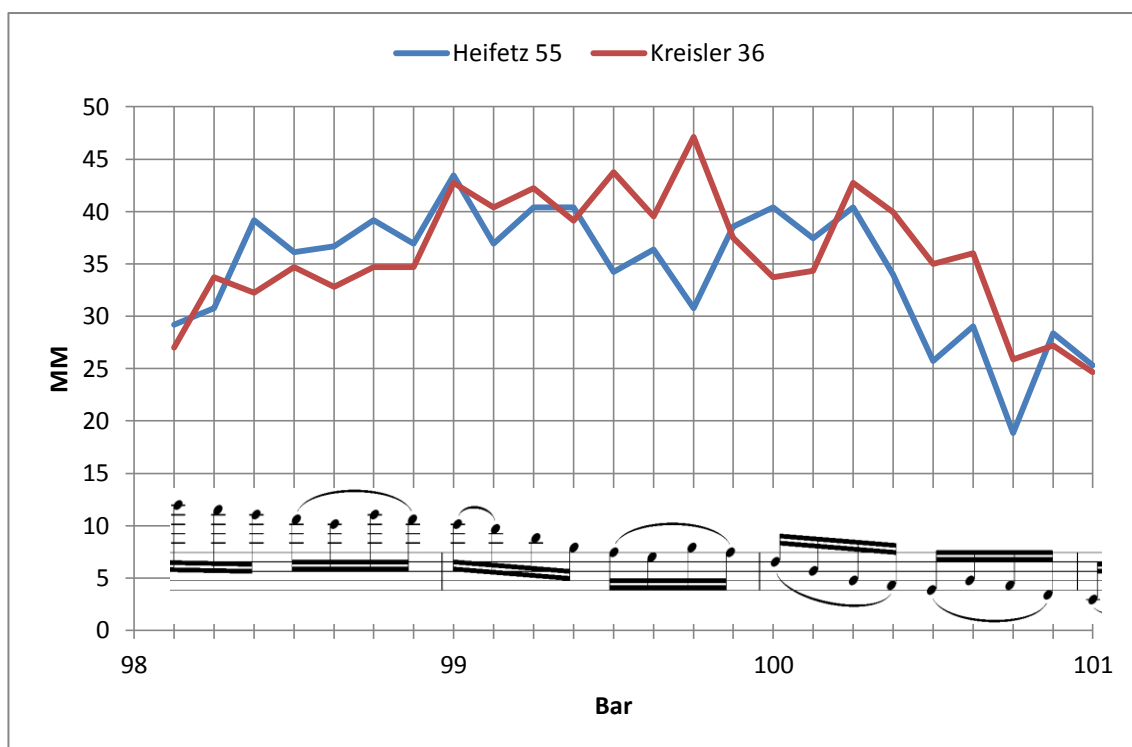


Figure 5.91 Semiquaver data, bb. 98-101, selected performances, Video 7.07.

Heifetz and Kreisler both exhibit arched shaping over the mostly unaccompanied three-bar passage, as shown in the above graph which shows MM values for every semiquaver in bars 98 to 101. Heifetz's arch is punctuated by a slight slowing towards the end of bar 99 which coincides with an upward *portamento* to the penultimate G. Kreisler, in contrast, continues the momentum before a slight but nonetheless audible broadening into the beginning of bar 100, directly before the 'sul G' marking. Both players significantly lengthen the penultimate semiquaver in bar 100, holding on to the F before playing a slide down to the D.

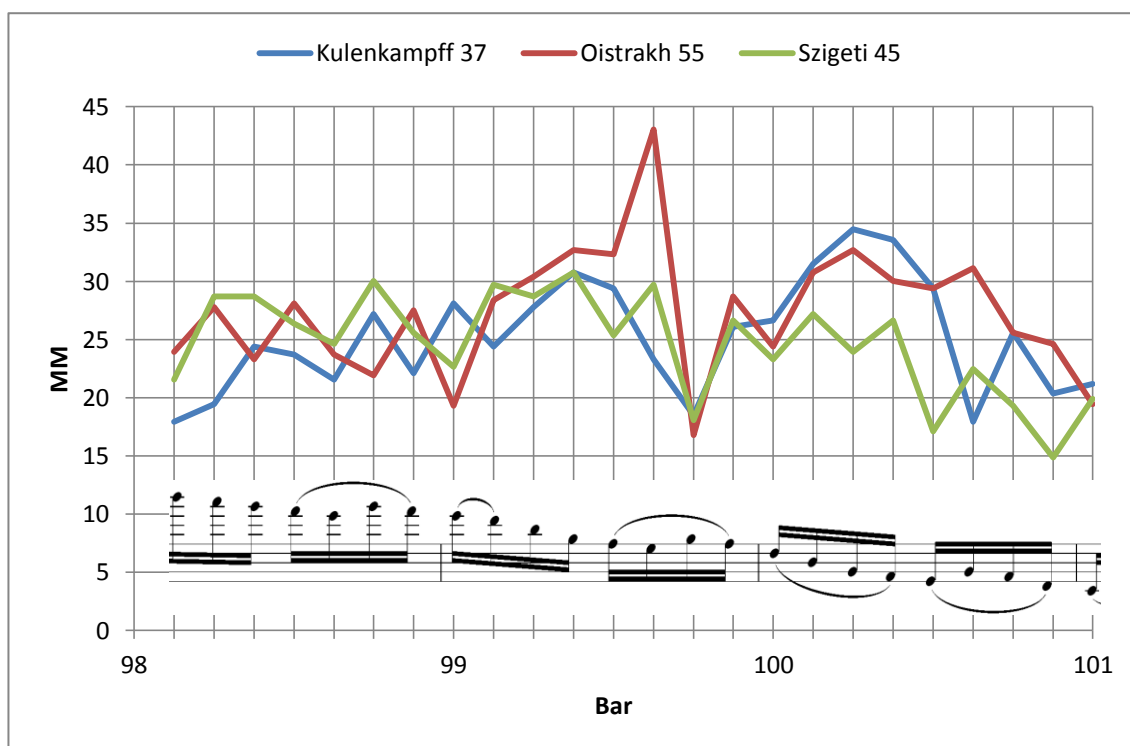


Figure 5.92 Semiquaver data, bb. 98-101, selected performances, Video 7.08.

Kulenkampff, Oistrakh and Szigeti use arch shaping on a smaller scale, basing their interpretation of the passage around *portamenti*. All three players lengthen the penultimate semiquaver in bar 99: Oistrakh, whose dramatic slowing makes the slide a central feature of the passage, and Szigeti both play a slide up to the G in a similar manner to Heifetz, whereas Kulenkampff plays his slide a note later, from the G down to the following F. Kulenkampff also slows for another *portamento* up to G during the second beat of bar 100, which he plays as a harmonic.

In addition to *portamento*-related note lengthening, there are also instances of agogic accents; most notably Oistrakh's lengthening of the first semiquaver of bar 99 and Szigeti's of the first on the second beat of bar 100. Both of these instances are fairly unsurprising in terms of their location, as the agogic accents occur on relatively strong

beats; however, slightly less predictable use of lengthening is apparent in the following performances by Ferras and Menuhin:

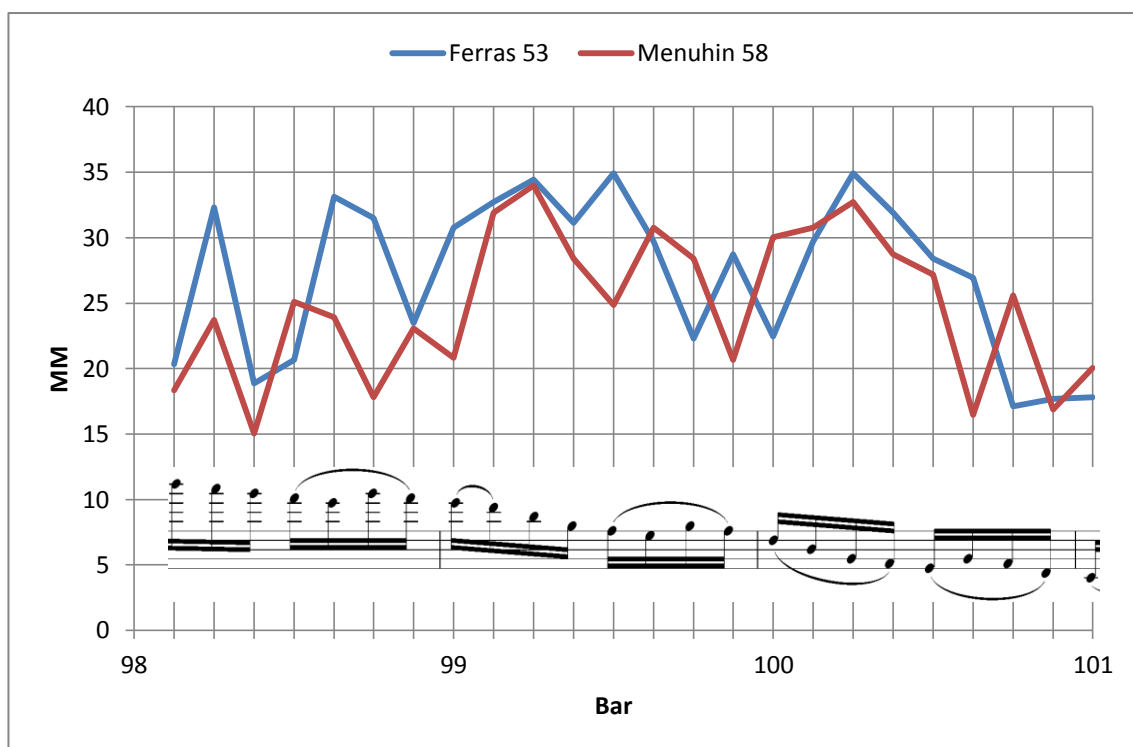


Figure 5.93 Semiquaver data, bb. 98-101, selected performances, Video 7.09.

Ferras and Menuhin both employ a large amount of flexibility in their interpretation of the semiquavers and the notes that they choose to lengthen are not always on strong beats or particularly expressive notes.



Figure 5.94 Semiquaver lengthening, bb. 98-101, as performed by Ferras, 1953.

Here is the solo violin part for bars 98 to 100, with the red noteheads representing notes that are prolonged in Ferras' 1953 recording. His use of lengthening in bars 99 and 100 is fairly straightforward in that the G in bar 99 represents a small-scale melodic peak, the following D is on the strongest beat of the bar and the last two longer notes are connected by a particularly slow and expressive single-finger *portamento*. However, in bar 98 only one of the four elongated notes, the F, falls on a strong beat in the bar and it is not immediately apparent what his communicative intentions are with regards to the other three.



Figure 5.95 Semiquaver lengthening, bb. 98-101, as performed by Menuhin 1958.

Menuhin lengthens a different set of notes in his 1958 performance, the first and fourth of which also lie on weak beats and do not seem to be of any great expressive importance relative to the notes which surround them. The weak G at the end of the first beat of bar 98 could potentially be lengthened for reasons of ensemble, giving the orchestra time to resolve its chord at the beginning of the following beat; however, this does not explain the shortening of the preceding note in both recordings. Surely the soloist would be easier to follow if the semiquavers were played evenly. It is also unlikely that the lengthenings occur for technical reasons, such as to allow time for awkward changes of position, as the speed of semiquavers is relatively slow at this point and allows plenty of time to negotiate such complications. Perhaps the most compelling argument for the lengthening of notes in this somewhat unusual manner is that it is a conscious attempt to create a sense of freedom by deliberately avoiding the accentuation of strong beats, which helps to re-enforce the 'timeless', cadenza-like feel of this passage, in contrast to the sense of driving momentum built up towards the preceding climax.

3.8 Coda

The final section, beginning in bar 103, takes the form of a prolonged *ritardando* in most performances, as can be seen from Figure 5.96. Much of this section is metrically impelled by the orchestral texture rather than the soloist, in that 15 out of the 24 beat onsets that constitute bars 103 to 115 are determined by the orchestra due to a combination of rests and tied-over notes in the solo line. This presents difficulties when analysing the soloist's approach to shaping the section as a whole, therefore the following analysis focuses predominantly on small-scale instances of rubato, where the soloist has a greater degree of control as to how the music proceeds. The final two bars of the movement have been omitted altogether, as the solo part consists solely of a held F.

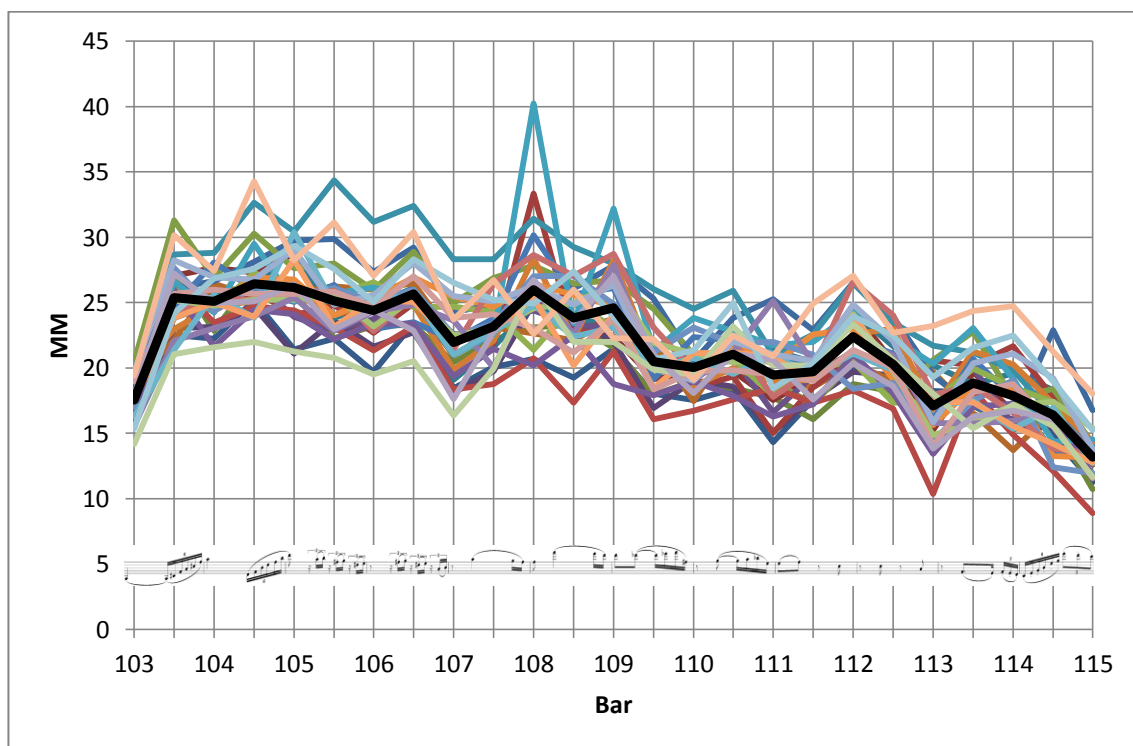


Figure 5.96 Beat data, bb. 103-115, all performances.

It is clear from Figure 5.96 that the largest discrepancy between performances occurs around bars 107 to 109, which represents a particularly expressive piece of writing within the solo line, containing both wide intervals and chromaticism. Milstein's 1950 recording is the most flamboyant at this point, as a result of him pushing ahead of the orchestra through the second beat of bars 107 and 108, thus creating a feeling of struggle between the melody and its accompaniment. The wild 'zig-zagging' in the tempo graph of Figure 5.97 is the result of beats being alternately determined by soloist (green markers) and orchestra (red markers).

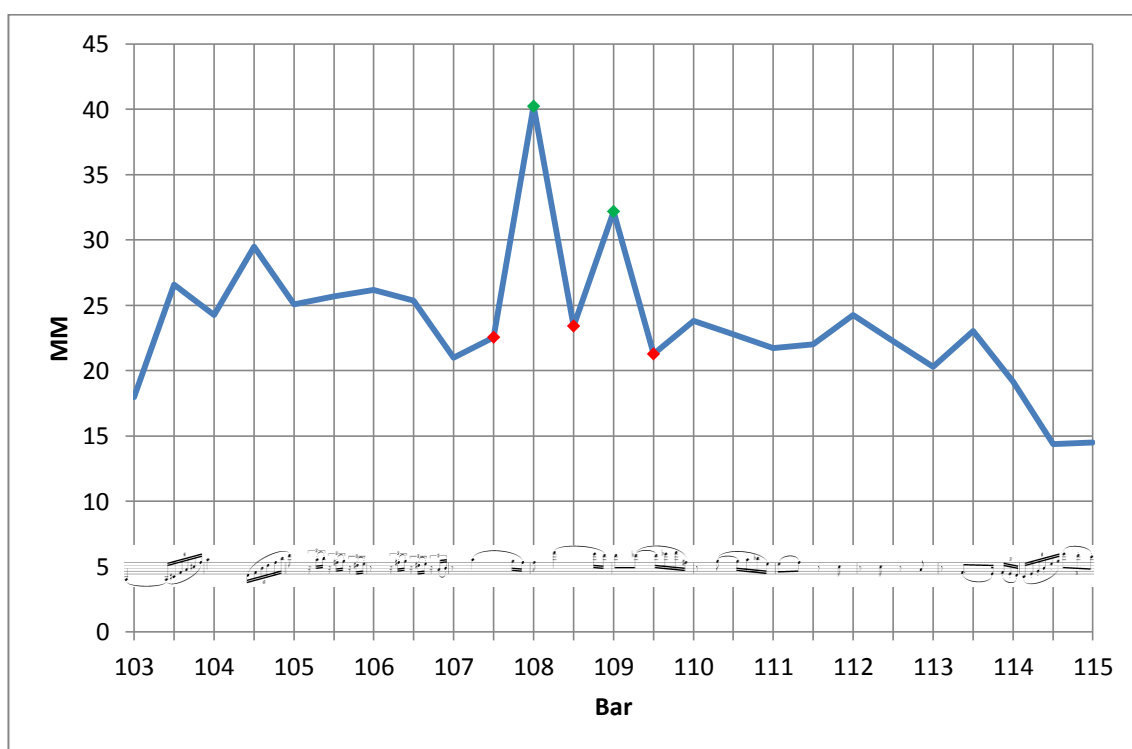


Figure 5.97 Beat data, bb. 103-115, Milstein 1950, Video 8.01.

Milstein alters the rhythm of the last two semiquavers in bar 107 to the extent that the second is approximately half the length of the first, giving them a triplet feel. Kreisler does the same in his 1927 performance, with the effect being so pronounced in bar

108 that the notes are perceived as a dotted semiquaver followed by a demisemiquaver.

Video 8.02

A number of players anticipate the off-beat E-flat in bar 109, an effect which is most pronounced in recordings by Kogan, Menuhin and Szigeti. This anticipation allows for more time to be taken over the rest of the bar, including a particularly expressive downward interval of a diminished octave, without too much momentum being lost prior to the end of the phrase.

Video 8.03

In general, performers employ small-scale rubato, such as rhythmic alteration and agogic accents, less in the coda than elsewhere in the movement, most probably due to the *tranquillo* feeling of the solo violin line and less 'disturbance' in the harmony and overall texture. There is relatively little use of *portamento*, although there are few instances of rubato being used within the context of expressive slides, such as in Kreisler's 1927 performance of bars 103 and 104:

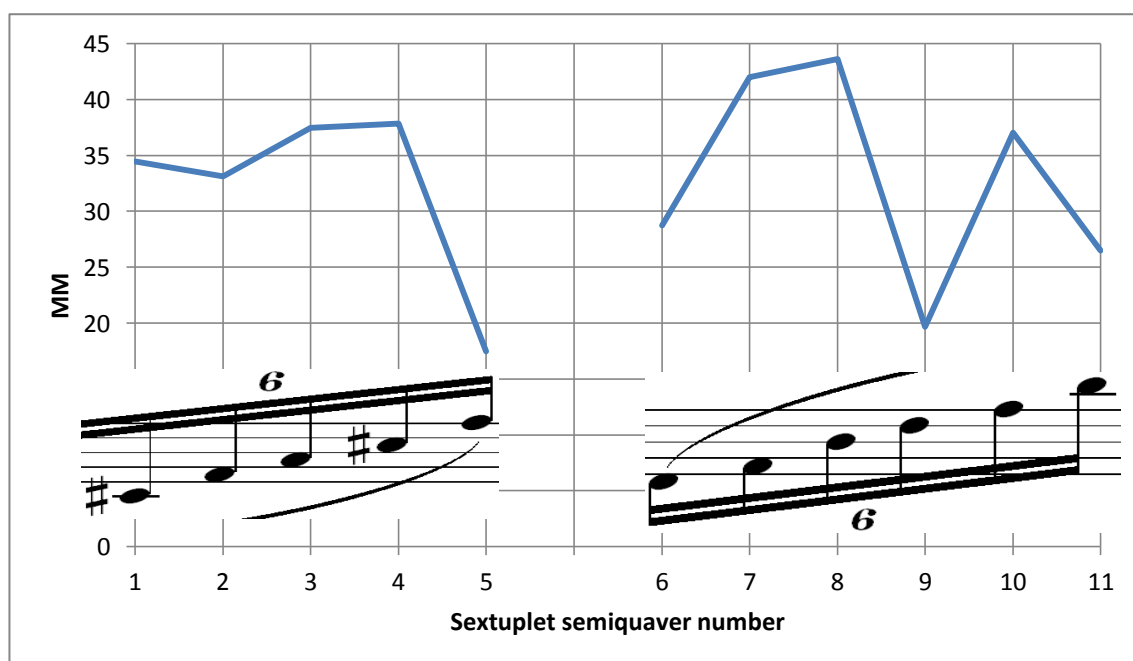


Figure 5.98 Sextuplet semiquaver data, bb. 103-104, Kreisler 1927, Video 8.04

Examining the graph of MM values for each individual sextuplet in bars 103 to 104 reveals two sudden slowings, on note number 5 and 10, which represent sudden deviations in the overall tempo contour. These two notes are arrived at by means of slow and highly prominent single-finger *portamenti*, with the beginning note only being sounded extremely briefly before the slide begins. As discussed in the previous chapter, single-finger *portamenti* within slurs create the most difficulty when determining note-onset times as there is not a discrete moment when the finger or bow stroke is changed, thereby articulating the transition from one note to the next.²⁹ Where such a change of note is perceived to occur can be a subjective matter, highly dependent on the specific musical context of a *portamento*, along with its manner of execution. This author perceives the change to be mid-way through the slide, where a sudden change of finger-speed creates an audible moment of articulation within the otherwise smooth transition. This change of speed can clearly be seen in a spectrographic visualisation of the slide in bar 104, as shown in this screenshot taken in Sonic Visualiser:

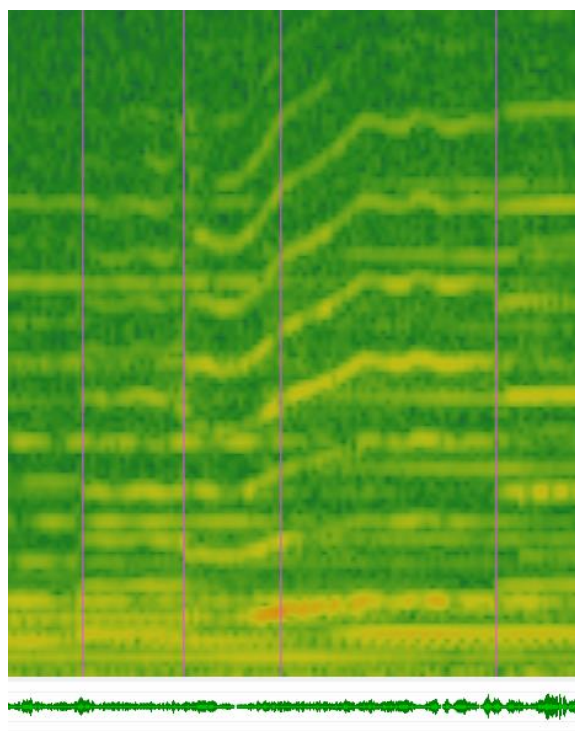


Figure 5.99 Spectrographic image of a *portamento*, b. 104, as performed by Kreisler 1927.

²⁹ See chapter 2, p. 111-112.

The unbroken yellow line is characteristic of a single-finger slide and the decrease in speed can be seen at the third purple 'time instant' line, especially in the upper end of the frequency spectrum. Interpreting the timing of these sextuplets in this way means that the overall time value of the ending note of each slide is substantially increased in each case, producing the clear dips in tempo on the graph. Were the onsets following each slide interpreted as being at the point of arrival at the new pitch, the graph would look noticeably different:

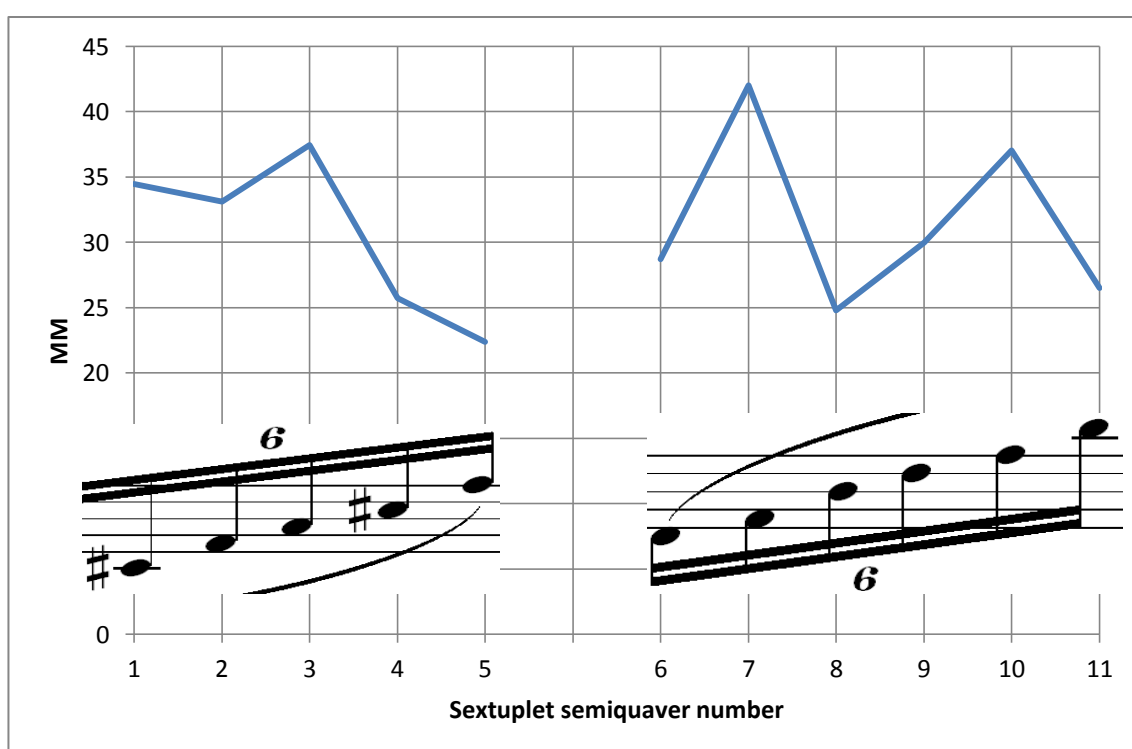


Figure 5.100 Alternative sextuplet semiquaver data, bb. 103-104, as performed by Kreisler 1927. Video 8.05

In this scenario the entire slide is contained within the length of the preceding note, resulting in the difference in contour on the graph, as the slowing takes place a note earlier in each group. For this author, however, the prominence of the *portamenti* is too great not to hear it as a musical event in itself, which articulates the transition

from one note to the next. Either way, both single-finger *portamenti* coincide with a slowing and the 'onset ambiguity' that results from such slides is arguably an effect in itself.

The final passage where any noticeable alteration of rhythm occurs comes four bars from the end of the movement, where a few performers vary the length of the triplets on the last quaver beat of bar 113. Heifetz lengthens the second triplet, E-natural, particularly clearly in his 1939 recording, which reinforces the semitonal dissonance against the accompanying F diminished chord. Ferras does exactly the opposite in his 1953 recording by making the E-natural the shortest of the three triplets, choosing instead to particularly lengthen the initial F before a downward *portamento* to the E, thus drawing attention to the same downward semitone interval in a different manner.

Video 8.06

3.9 Discussion

Having examined the movement in detail, section by section, the following summary represents an attempt to bring together the key areas of interest that have arisen during analysis of all thirty performances. This analytical evidence is examined in the light of previous research into musical timing, along with theoretical writings pertaining to rubato from the first chapter, with a view to creating a clear stylistic picture of the way rubato is utilised in the *Adagio* by performers of this period.

3.9.1 *Multiple performances by the same artist*

So far in this chapter there has been relatively little mention of how multiple performances by a particular artist relate to one another. The main reason behind this omission is that the analytical information presented by this study has been overwhelmingly diverse; the large degree of variety that is exhibited between performances has inevitably led to a concentration on how they differ from each other, whereas in the case of multiple performances there is precious little to talk about in this regard. Indeed, by far the most striking feature when examining these multiple performances is how similar their use of rubato is between performances, in spite of the diversity in performing conditions and often-substantial length of time between recordings. This phenomenon has also been exhibited in previous studies, such as those by Todd, who observes that ‘skilled performers can show a remarkable degree of reproducibility from one performance to the next.’³⁰ In particular, the large-scale shaping of sections is extremely consistent between different performances by the same soloist, which goes some way in confirming the previous assertion that conductors do relatively little to influence a performer’s use of rubato, in spite of their

³⁰ Todd, N. (2009) ‘A computational model of rubato’, p. 69.

ability to control the general tempo of individual sections and the movement as a whole.³¹

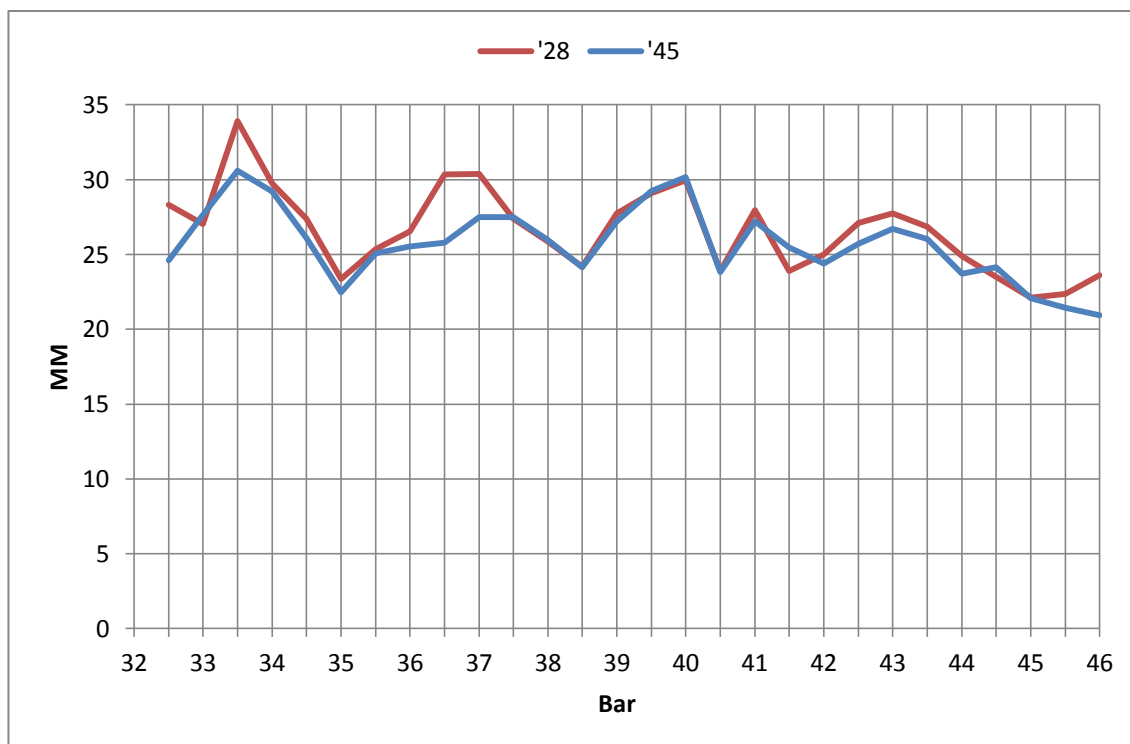


Fig 5.101 Beat data, bb. 32-46, both Szigeti performances.

Multiple performances have been analysed from eight of the violinists that feature in this comparative study: namely Ferras, Heifetz, Kogan, Kreisler, Menuhin, Milstein, Oistrakh and Szigeti. The above graph shows both of Szigeti's performances of the opening violin entry at beat level, which are virtually identical in spite of the performances being seventeen years apart. Indeed, this remarkably consistent duplication of expressive timing patterns extends to all of the multiple performances examined in this study, some idea of which is demonstrated by these further examples taken from multiple recordings by Oistrakh and Heifetz, which are very much representative of this overall trend:

³¹ See chapter 2, p. 96.

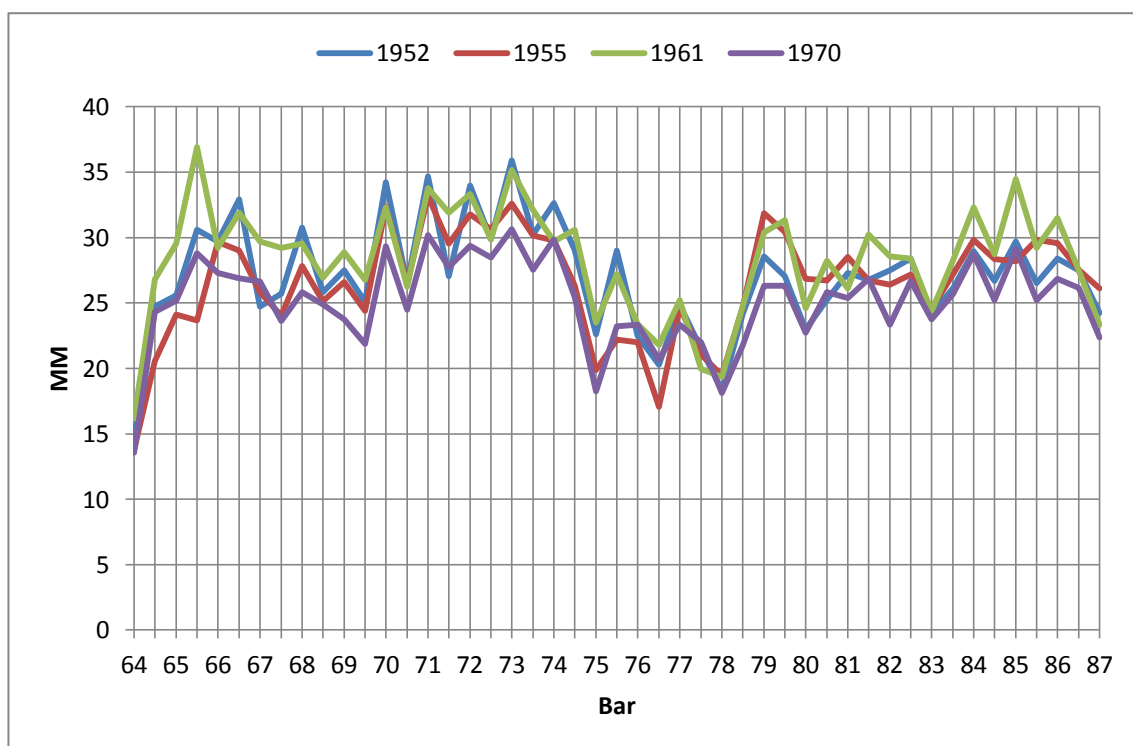


Fig 5.102 Beat data, bb. 64-87, all Oistrakh performances.

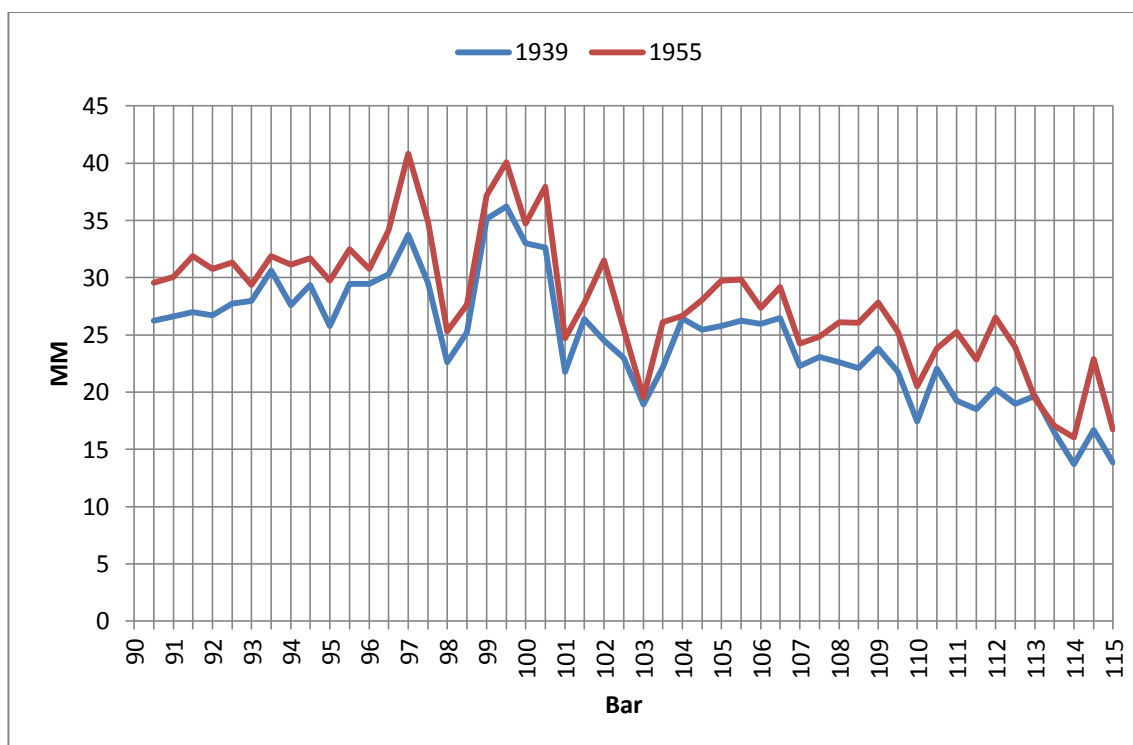


Fig 5.103 Beat data, bb. 90-115, both Heifetz performances.

This consistency between multiple performances also extends to the use of rubato at lower levels within the musical structure. Although slightly more variation is apparent at a note-to-note level, the following examples help to illustrate the degree to which these performers exhibit similarity in their performance of individual note figurations.

(Figures 5.104 to 5.10 all refer to semiquaver data, bb. 33-34)

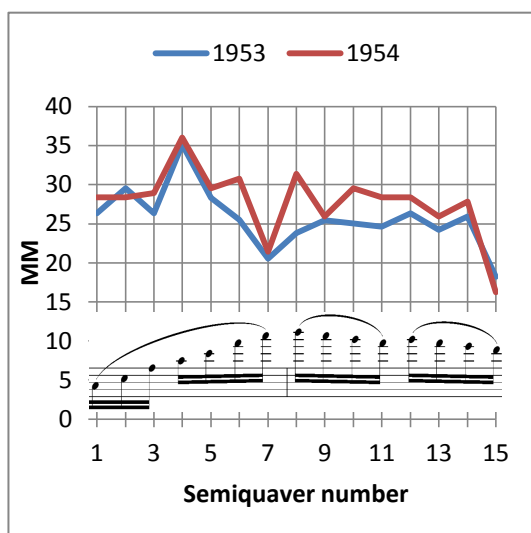


Figure 5.104 Ferras

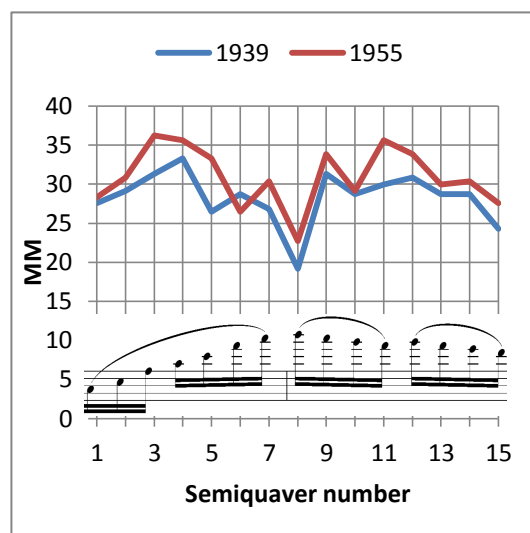


Figure 5.105 Heifetz

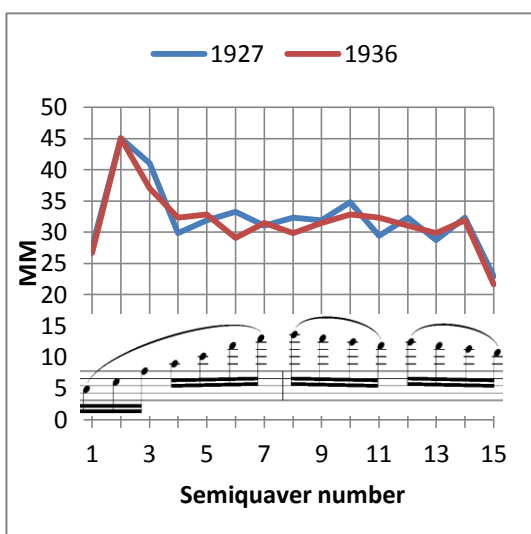


Figure 5.106 Kreisler

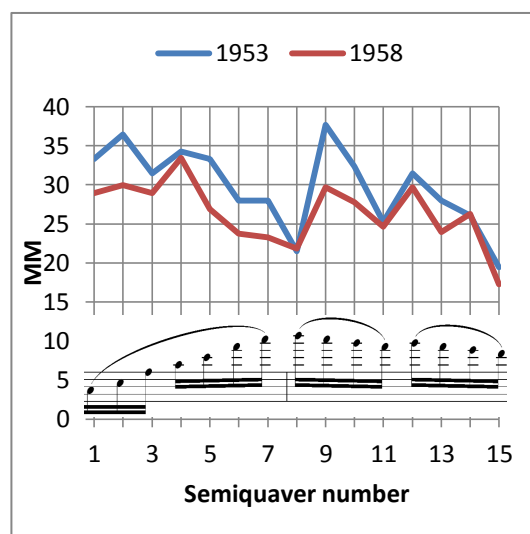


Figure 5.107 Kogan

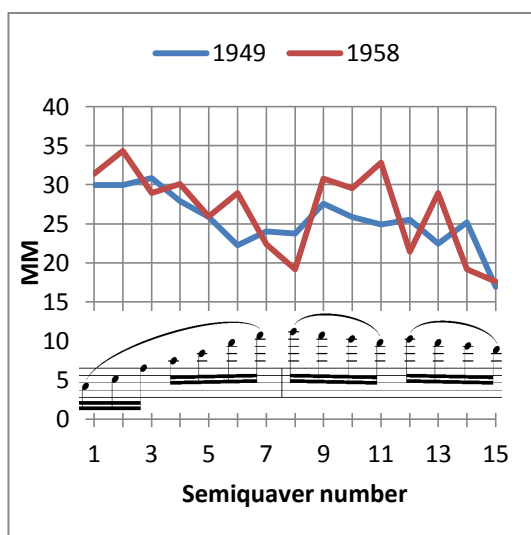


Figure 5.108 Menuhin

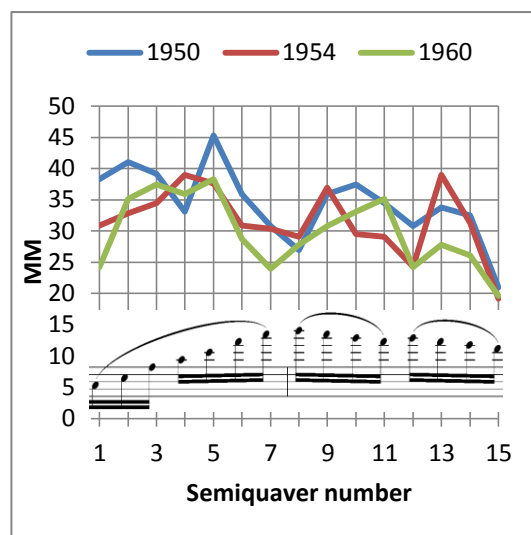


Figure 5.109 Milstein

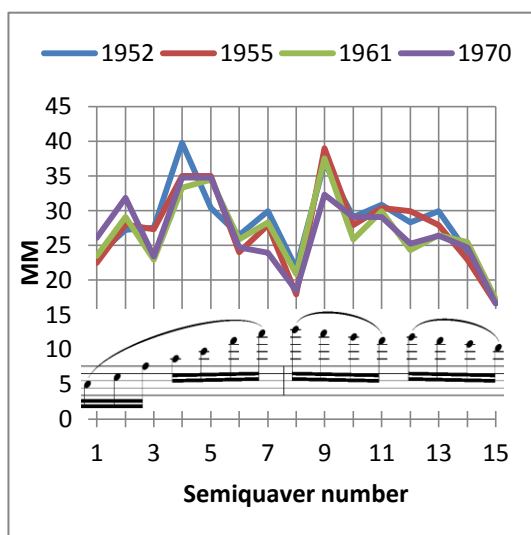


Figure 5.110 Oistrakh

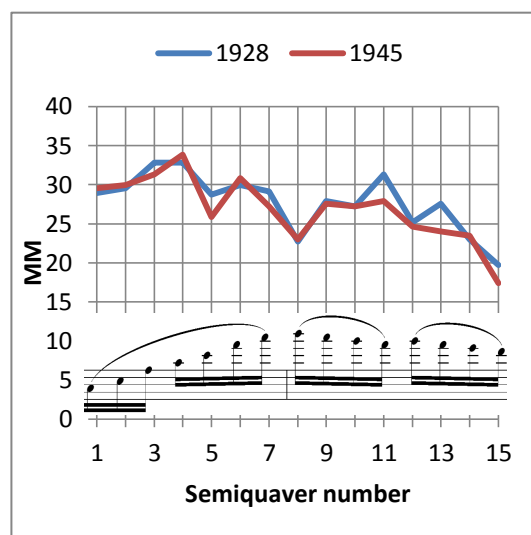


Figure 5.111 Szigeti

These seven graphs represent all multiple performances of the semiquavers in bars 33 to 34 that were examined earlier on in the chapter. Although some divergence in approach can be seen, particularly in performances by Menuhin and Milstein, players' interpretation of these semiquavers is surprisingly consistent between recordings in the majority of cases. This consistency appears even more significant when one considers the huge discrepancy between different performers' use of rubato, with each player exhibiting what could be seen as their own individual stylistic 'fingerprint'. Indeed, the tempo graphs used herein can be likened to fingerprints, in that they offer a visual representation of a performer's individual playing style; if a different recording of the same piece by one of these performers were examined using the same analytical methods, it is most likely that they could be identified by their timing of a short passage alone.

The fact that performers' use of rubato appears not to vary a great deal over time suggests that it would be arguably more useful to examine these recordings in terms of the performer's date of birth, not when a given recording was made. As Cook states, 'there is an argument that the... date of birth is actually more revealing, on the grounds that most performers acquire their style of playing at a relatively young age.'³² The following table shows all thirty performances in order of the artists' year of birth, which represents something of a drastic reshuffle of Table 5.1 given the variety in performers' age at the time of recording.

³² Cook, N. (2009) *Op. cit.*, p. 782.

Performer	Year of recording	Year of birth
Kreisler	1927	1875
Kreisler	1936	1875
Huberman	1944	1882
Szigeti	1928	1892
Szigeti	1945	1892
Kulenkampff	1937	1898
Heifetz	1939	1901
Heifetz	1955	1901
Francescatti	1958	1902
Milstein	1950	1904
Milstein	1954	1904
Milstein	1960	1904
De Vito	1955	1907
Oistrakh	1952	1908
Oistrakh	1955	1908
Oistrakh	1961	1908
Oistrakh	1970	1908
Schneiderhan	1953	1915
Menuhin	1949	1916
Menuhin	1958	1916
Szeryng	1967	1918
Neveu	1945	1919
Stern	1973	1920
Grumiaux	1958	1921
Renardy	1948	1921
Kogan	1953	1924
Kogan	1958	1924
Martzy	1954	1924
Ferras	1953	1933
Ferras	1954	1933

Table 5.3 List of the thirty recordings in order of performers' date of birth.

Since a number of the following sections discuss performances in terms of violinists' date of birth, this will hopefully provide a useful point of reference when examining underlying trends in the period as a whole. It should be noted that from this point forth, when describing performers as either 'older' or 'younger', this relates specifically to date of birth rather than a performer's age at the time of recording.

3.9.2 *Tempo Curves*

The structural shaping of musical time at section and phrase level invariably involves some degree of slowing at the end of structural units: a well-documented phenomenon that Todd refers to as 'phrase-final lengthening' in *A Model of Expressive Timing in Tonal Music*.³³ Todd's model for performance timing is based on the notion that the degree of slowing at any given point is proportional to the respective importance of a structural boundary; put simply, the more important the structural unit, the more a performer will slow down at the end of it. Clarke discusses 'a performer's use of tempo variation to convey phrase structure in music, the basic relationship being that phrase boundaries are marked by a slowing of the tempo, the degree of slowing being proportional to the structural importance of the phrase boundary.'³⁴ Todd's theory makes a lot of musical sense, as the more important a musical event, the more significance one would expect a performer to ascribe to it in their manipulation of tempo. Unsurprisingly, the most substantial and prolonged slowing in performances of Brahms' *Adagio* invariably occurs in the coda, as the movement draws to a close. There is no marking at all to this effect in the score, aside from a notated pause on the final bar, and yet it would be virtually inconceivable for a performer to end the movement without at least some degree of slowing, lest it sound 'unfinished'.

Any kind of slowing, aside from the aforementioned final *ritardando*, inevitably necessitates a return to tempo, either sudden or gradual, otherwise the music would simply grind to a halt. This repeating pattern of acceleration followed by deceleration results in approximately parabolic curves or 'arch shapes' on a tempo graph, such as the kind we have seen on numerous occasions in this study, and these shapes demonstrate to the analyst how a particular performer uses musical timing to delineate the underlying musical structure. Repp states that 'closer examination of the average timing profiles (which the reader may wish to undertake with the score in hand) reveals a pervasive use of conventional *accelerando-ritardando* shapes to mark

³³ Todd, N. (1985) 'A model of expressive timing in tonal music', p. 34.

³⁴ Clarke, E. (2009) 'The semiotics of expression in musical performance', p. 90.

structural units.³⁵ This use of *accelerando-ritardando* shaping appears to directly correspond with Riemann's 1882 description of '*stringendo-calando* in the shading of phrases'.³⁶ As he explains, 'as a rule, a slight urging, pressing forward is in place when the musical development becomes more intense, when it is positive; and, on the other hand, a tarrying, when it approaches the close.'³⁷ Although written more than a hundred years earlier, Riemann seems essentially to be describing a similar phenomenon to Todd's 'phrase-final lengthening'; however, Todd's model does not include any degree of compensatory *accelerando*, assuming an immediate 'a tempo' follows each *ritardando* rather than a gradual return to speed.

3.9.3 Higher-Level Structural Delineation

As Todd's terminology suggests, tempo curves are fundamentally linked to phrasing and issues of structural delineation. In terms of the way this is manifested in large-scale sections within the *Adagio*, in addition to a prolonged *ritardando* in the coda, all thirty performances exhibit a substantial slowing at the end of bars 45, 49, 53, 63, 77, 86 and 102. All of these points mark the end of a clear structural unit and performers invariably reflect this by slowing down substantially before returning to the general tempo at the start of the following section. Aside from the slowing at the end of bar 63, which is primarily the result of a notated pause, and bar 86, which represents the end of a three-bar notated *calando*, the other four points have nothing to that effect indicated in the score. As with the extra-notational rubato described in Strauss and Liszt's conducting,³⁸ these slowings must therefore be wholly interpretational. However, the fact that they occur in all thirty performances strongly suggests that they are not entirely the result of an individual's interpretation, rather they constitute part of the style and performing tradition that these performers belong to.³⁹ This

³⁵ Repp, B. (1997) 'Expressive timing in a Debussy prelude: a comparison of student and expert pianists', p. 263.

³⁶ Riemann, H. (1882) *Musik-Lexicon*, p. 673. Cited in Philip, R. (1992) *Op. cit.*, p. 38.

³⁷ Riemann, H. (1882) *Musik-Lexicon*, p. 226. Cited in Philip, R. (1992) *Op. cit.*, p. 7.

³⁸ See chapter 1, pp. 37-38.

³⁹ See introduction, pp. 9-11.

consensus in approach seems to confirm Repp's assertion that performers exhibit the greatest degree of similarity in their shaping of the highest levels of musical structure:

with regard to timing at least, there is an inverse relationship between the length of a musical passage and the diversity of individual performances... within a short passage comprising a single phrase, a considerable variety of expressive detail may be observed, presumably because there are fewer and/or weaker structural imperatives at such a local level.⁴⁰

Within these larger sections, which represent the highest-level of structural division in the movement, we begin to see variety of internal delineation between performances, with players selecting different 'timing strategies' by which they internally articulate the larger sections of music. Whereas there can be little argument with regards to how the movement is divided into large-scale sections, particular given their variety in musical character, within these sections performers are presented with a certain amount of choice as to how they are to be organised, in terms of dividing them into shorter sections or individual phrases and sub-phrases. As stated by Repp, 'while some of this expressive variation may be idiosyncratic, distinct expressive strategies shared by several artists can be revealed by statistical analysis of performance measurements.'⁴¹ For instance, the opening violin entry, comprising bars 32 to 46, consists of a single fourteen-bar phrase, although there are a number of options regarding how, if at all it is to be internally articulated. Menuhin is the only player to shape the entire phrase as a single structural entity, whereas the majority of players reflect shorter phrase units in their timing strategies; either dividing it structurally into sub-phrases, like Kulenkampff and Kreisler, or basing their shaping more around individual note figurations and melodic contour, as is the case with Milstein, Francescatti and Martzy.⁴² Crucially, the degree of slowing at lower-level structural boundaries within this section is much less pronounced than at the end of the section as a whole, which is very much in keeping with Todd's hierarchical model of 'phrase-final lengthening'. This idea of a correlation between the relative importance of a

⁴⁰ Repp, B. (1998) 'A microcosm of musical expression. I. Quantitative analysis of pianists' timing in the initial measures of Chopin's Etude in E major', p. 1086.

⁴¹ *Ibid.*, p. 1086.

⁴² See pp. 139-140.

structural boundary and the degree of slowing is clearly manifested throughout the movement in all thirty performances, indicating either that all performers have a clear conception of structural hierarchy or that they are applying it instinctively, having somehow assimilated this knowledge indirectly, through their training or by exposure to other players' performances of the piece, live or recorded.

Although a detailed psychological investigation into why slowing in performance creates a sense of finality in the listener lies somewhat outside the scope of this study, the idea of music 'coming to rest' is one that is worthwhile to elucidate, particularly given the visual aspects of the analysis within this study. David Huron discusses the parallel between performance timing and Newtonian mechanics, which is an analogy that proves useful in a number of areas within the context of musical timing:

Interestingly, Ulf Kronman and Johan Sundberg have shown that the shapes of tempo curves in real performances resemble Newtonian mechanics: what musicians mean by "slowing down" is the same as Isaac Newton's conception of a body coming to rest. Performers execute ritardandos using the same trajectory as a rolling ball coming to rest.⁴³

Whilst players frequently exhibit similar 'timing patterns' in the sense that they use rubato to delineate structure in the same way, for instance by dividing an eight-bar section into two shorter four-bar sub-phrases, the manner in which each performer internally shapes the passages within that structural scheme varies a great deal. Although two performers may occasionally shape a particular passage or phrase in a similar way, they will almost inevitably take divergent approaches in the following section, thus making it impossible to group performers by the way in which they use rubato across the movement as a whole. Auer offers a particularly pertinent observation with regards to this kind of interpretational diversity:

⁴³ Huron, D. (2006) *Sweet anticipation*, p. 316.

Phrasing is always something essentially personal. It has really no fixed laws – though various conflicting systems of phrasing exist – and depends wholly on the musical and the poetical sense of the performer.⁴⁴

Of course, musical context is also of the utmost importance, as it represents the ‘raw material’ that performers subject to interpretation. Brahms’ *Adagio* contains much variety in musical character, and contrasting sections present the performer with varying expressive demands.

3.9.4 *Effect of Differing Musical Context on Timing Strategies*

As one might expect in this kind of late-Romantic repertoire, each section is treated quite differently with regards to timing, depending on its particular musical character. The clearest arch shaping occurs in the context of longer phrases, which are generally characterised by a lyricism that stems in part from a greater degree of consistency in note durations. In addition to the expansive opening violin entry from bars 32 to 46, other such passages include those from bars 56 to 59, 64 to 66 and 78 to 86. The common application of clear *accelerando-rallentando* shaping within these sections helps to create a sense of cohesion within each phrase, thus adding to the overall sense of lyricism, which could conceivably be compromised were there too many smaller-scale interruptions to the overall musical flow.

Conversely, passages of music that are based around smaller, more fragmented phrase units or note figurations tend to exhibit far less regular timing patterns, with shaping instead reflecting the irregularity of the musical structure. Regular timing patterns at phrase level, represented by smooth tempo curves, generally indicate that the performer is more concerned with higher level musical structure, whereas irregular timing profiles tend to suggest that the performer is more concerned with lower-level detail. These contrasting ‘lyrical’ and ‘fragmentary’ approaches can be seen

⁴⁴ Auer, L. (1921) *Violin playing as I teach it*, p. 73.

juxtaposed in the section from bars 56 to 63, which is clearly divided into two four-bar halves by a substantial slowing at the end of bar 59 in most performances. These two halves are treated very differently in terms of their overall shaping, reflecting the contrasting compositional style evident in each; the first consists of a lyrical, albeit melodically disjunct, four-bar phrase and is generally shaped as such with an overriding arch shape, whereas the second is melodically far more fragmented, with performers tending to exhibit smaller-scale, less-regular shapes based around these shorter note figurations.

3.9.5 *Passages of Increased Flexibility*

The orchestral texture also plays an important role in determining what manner of flexibility is employed by the soloist. Outside of the orchestral tuttis, the orchestral scoring in the *Adagio* is generally quite sparse when compared to the outer movements of the concerto, which provides much leeway for the soloist with regards to rubato. However, there are certain passages which afford a particularly large amount of freedom for the soloist and it is predictably within these passages that the greatest amount of idiosyncratic variety can be observed between performances. As we have already seen, the passage that demonstrates the highest degree of variation begins at the climax of the whole movement in bar 98, leading to the start of the coda at bar 103. Following a sustained build-up from bar 91, which involves a steady build-up both in pitch and dynamic, the orchestra suddenly drops out midway through bar 98, leaving the soloist to make a cadenza-like descent spanning three octaves in as many bars. Performers have the license to approach such passages far more flexibly than elsewhere, where the momentum inherent within the orchestral texture can prove more prohibitive.

This idea of musical momentum as a prohibitive factor with regards to idiosyncratic flexibility is an important one, as the greatest amount of flexibility tends to be

apparent not only when the orchestral texture allows for it, but also when the music has less sense of underlying direction, as is the case in bars 98 to 103. Of course, the slow movement from Brahms' concerto was chosen over the outer two quicker movements for this very reason, as the sense of drive inherent in quicker tempos tends to limit the scope for rubato. The possibilities for musical characterisation are also far greater in this kind of Romantic repertoire, as Johnstone states in 1910:

'Capriciousness, then, is a characteristic of this modern emotional style; moods vary capriciously, and constant variations in the *tempo* is [sic] one of the means adopted to interpret these capricious moods.⁴⁵ Other points where there is less of a sense of underlying musical direction include the brief solo entries in bars 48 to 49 and 52 to 54, which are interspersed with short orchestral *tuttis*. These short, recitative-like passages are characterised by their fragmentary melodic figurations, rhythmic complexity - as the result of frequently varied durational values - as well as a somewhat exploratory harmonic underpinning, as the music transitions through the tonally remote keys of G-flat major, B major and F-sharp minor in a matter of bars. The same can be said for bars 60 to 63 and 69 to 70, which similarly consist of short phrase units, sparse orchestral accompaniment and a reduced sense of harmonic momentum. The lack of underlying musical direction in these passages, both melodically and harmonically, in conjunction with the sparse orchestration, results in a large degree of idiosyncratic timing from performers that both reflects and emphasises the overriding sense of unrest within the music.

3.9.6 *Broadening at Musical Climax*

In addition to slowing at structural boundaries that separate one section or phrase from the next, a broadening of tempo sometimes takes place midway through a phrase, in order to highlight its climax. Just as slowing at the end of a structural unit creates a sense of 'arrival' at the beginning of the next, broadening at a climax also

⁴⁵ Johnstone, J. A. (1910) *The art of teaching pianoforte playing*, p. 114.

draws added attention, thus 'bringing it out' for the listener. Rachmaninov gives the following advice with regards how the climax of a movement should be approached:

This culmination, depending on the actual piece, may be at the end or in the middle, it may be loud or soft; but the performer must know how to approach it with absolute calculation, absolute precision, because if it slips by, then the whole construction crumbles, the piece becomes disjointed and scrappy and does not convey to the listener what must be conveyed.⁴⁶

Although rather vague, Rachmaninoff's recommendation clearly suggests that the climax should be 'brought out' for the listener and, given that musical expression principally involves the two variables of timing and dynamics and that a climax 'may be loud or soft', this statement strongly implies that timing plays a central role. Assuming that some degree of emphasis is required to avoid a climax 'slipping by' then it is not entirely unreasonable to assume that if this emphasis is not supplied by dynamics, it must be the result of rubato. The most substantial case of mid-phrase broadening in the *Adagio* is the aforementioned climax at bar 98, marked *espr. dolce*, which is preceded in all thirty performances by a substantial slowing in tempo. Other smaller-scale examples of mid-phrase climaxes frequently accompanied by a broadening of time include bars 58 and 66, although a slowing does not take place in all the performances.

Throughout this study structural slowing has been alluded to as a form of closure, just as a physical object comes to rest. Huron puts forward the interesting argument that, in addition to this 'learned association', slowing also results in the emotional effect of a passage being heightened:

Of course the frequent use of the ritard in cadential passages will invariably become a learned association. When we hear the music slow down, we might reasonably regard this as a signal of impending closure. But I would like to suggest that the original motivation for slowing was to heighten an emotional effect, not to delineate the musical syntax. The best evidence in support of this

⁴⁶ Norris, G. (1993) *Rachmaninoff*, p. 78. Cited in Dunsby, J. (2002) 'Performers on performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*, p 232.

view is the ubiquitous tendency for performers to slow down at moments of high predictability, even when these moments are not closural or structural.⁴⁷

In the case of slowing in order to highlight a musical climax the effect is not one of closure, as these climaxes almost invariably occur in the middle of a phrase or section, rather one of ‘arrival’. Assuming that Huron is correct, the overall impact of a musical climax would therefore be proportional to the degree of slowing, just as the sense of closure is proportional in Todd’s theory of ‘phrase final lengthening’ – in other words, the bigger the slowing, the greater the heightening of the overall emotional effect. This would explain why the slowing into bar 98, which represents the climax of the entire movement, is so substantial in all thirty performances, whereas the smaller-scale climaxes in bars 58 and 66 tend to be accompanied by a far smaller degree of slowing, with some performers choosing not to slow down at all.

Desain and Honing make the point that music is drawn into ‘sharper focus’ when it is performed at a slower tempo: ‘If I play the piece at another tempo, other structural levels become more important; for instance, at a lower tempo the tactus will shift to a lower level, the subdivisions of the beat will get more “in focus”, so to say, and my phrasing will have much more detail.’⁴⁸ In the case of broadening for a musical climax, which by its very nature involves music with particularly expressive content, the music is perceived with a greater sense of detail and the expressive potential of individual notes or figurations is afforded more time, resulting arguably in a greater degree of both clarity and emotional impact.

3.9.7 Average Performance

In terms of examining the *Adagio* as a work that is manifested in performance, as opposed to individual interpretations of the movement, the average performance

⁴⁷ Huron, D. (2006) *Op. cit.*, p. 316.

⁴⁸ Desain, P. and Honing, H. (1993) ‘Tempo curves considered harmful’, in Kramer, J.D. (ed.) ‘Time in contemporary musical thought’, p. 5.

plays an important role as it gives us a more comprehensive picture of the work's overall identity during the period in question.⁴⁹ If we take Rosenwald's view that a piece exists 'in the relation between its notation and the field of its performances,' then this theoretical performance, in averaging out the outlying idiosyncrasies of individual performances, gives us an overall view of how the movement is manifested in performances by eminent soloists of the early-twentieth century.⁵⁰ This kind of averaging process is less useful when examining the music at lower structural levels, where performances are so variable as to make any kind of averaging somewhat arbitrary; however, at higher structural levels, where performers exhibit a far greater degree of similarity, the average performance gives us a good idea of how the work tends to be approached in terms of larger-scale shaping. By averaging out the lower-level 'anomalies', we are left with a tempo contour that exhibits the kind of strikingly regular shaping that one might expect from an approach wholly concerned with the interpretation of higher-level structure.

Whilst certain performers may come close in particular sections or phrases, there is no single recording that is consistently similar to the average performance.

Schneiderhan's 1953 performance probably comes the closest, although he deviates noticeably from the average profile in a number of places.

⁴⁹ See introduction, p. 5.

⁵⁰ Rosenwald, L. (1993) 'Theory, text-setting and performance', p. 62.

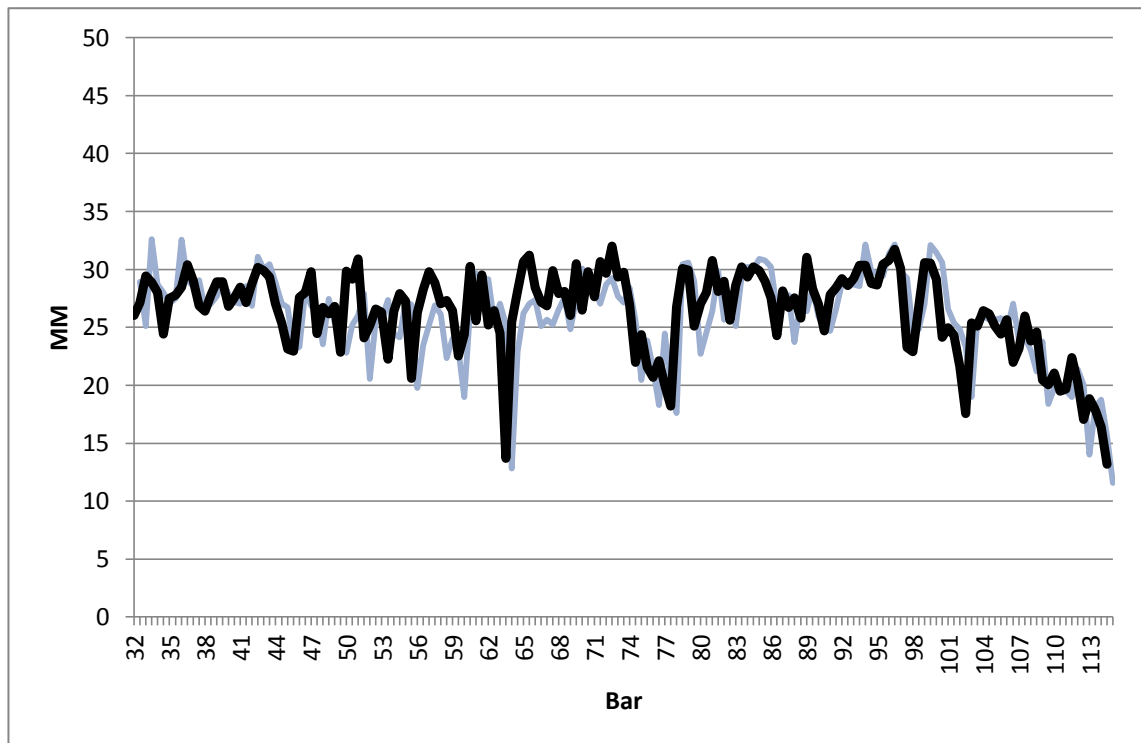


Figure 5.112 Beat data, entire movement, Schneiderhan 1953.

Figures 5.113 to 5.119 demonstrate the average timing profile in each of the more-substantial sections, along with the performer who adheres most closely to this theoretical performance in each case.

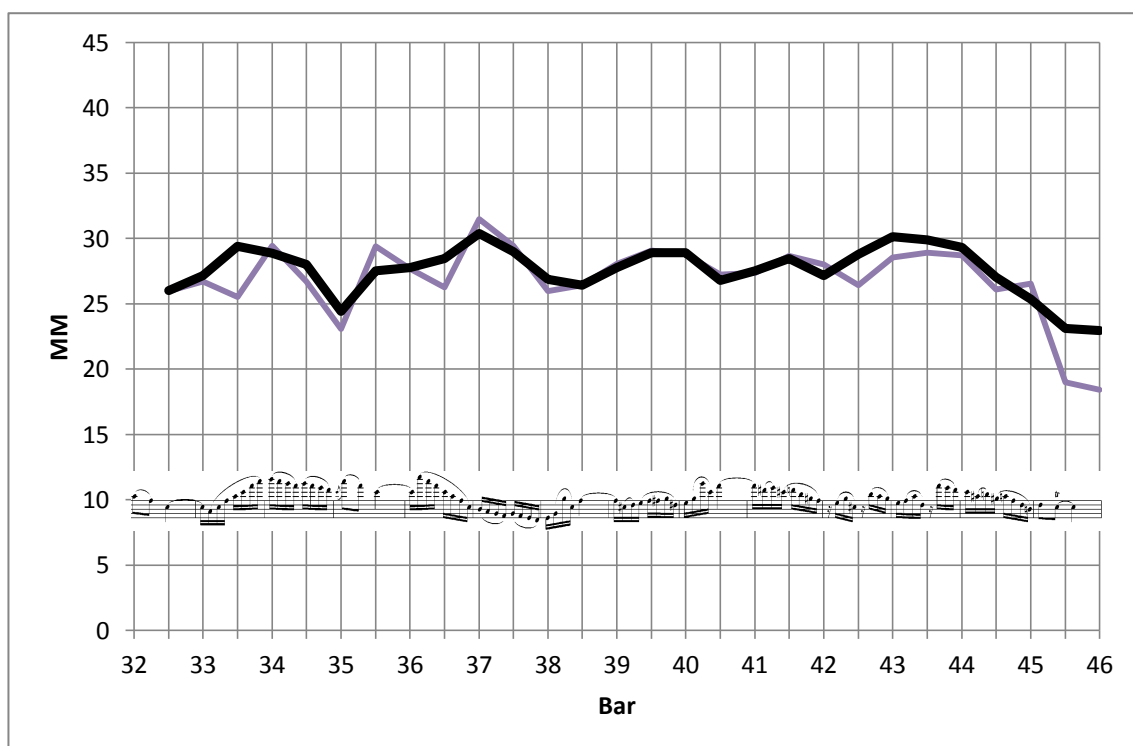


Figure 5.113 Beat data, bb. 32-46, Oistrakh 1955.

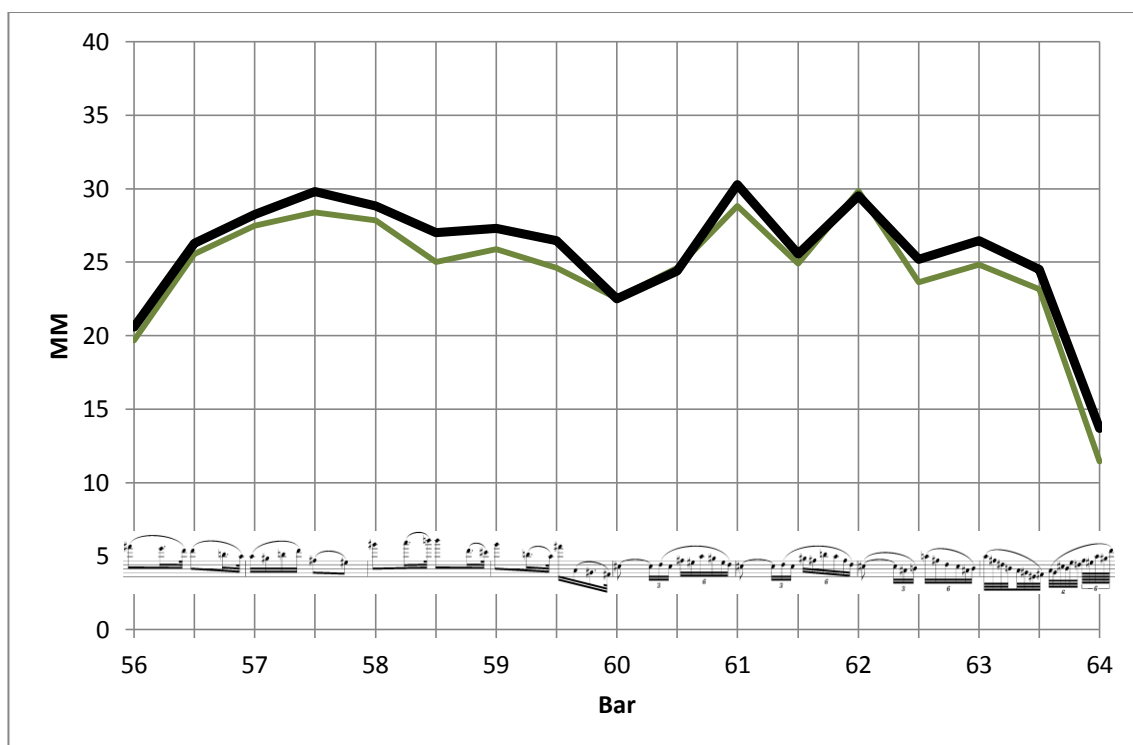


Fig 5.114 Beat data, bb. 56-64, Ferras 1954.

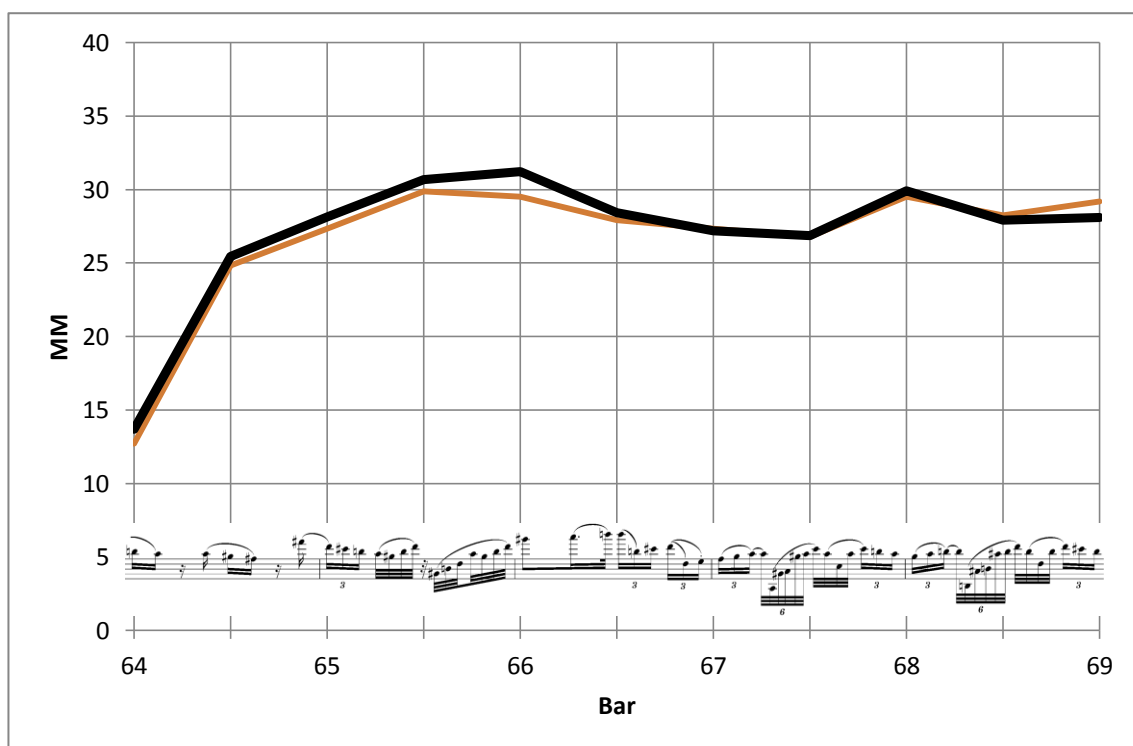


Fig 5.115 Beat data, bb. 64-69, Kreisler 1936.

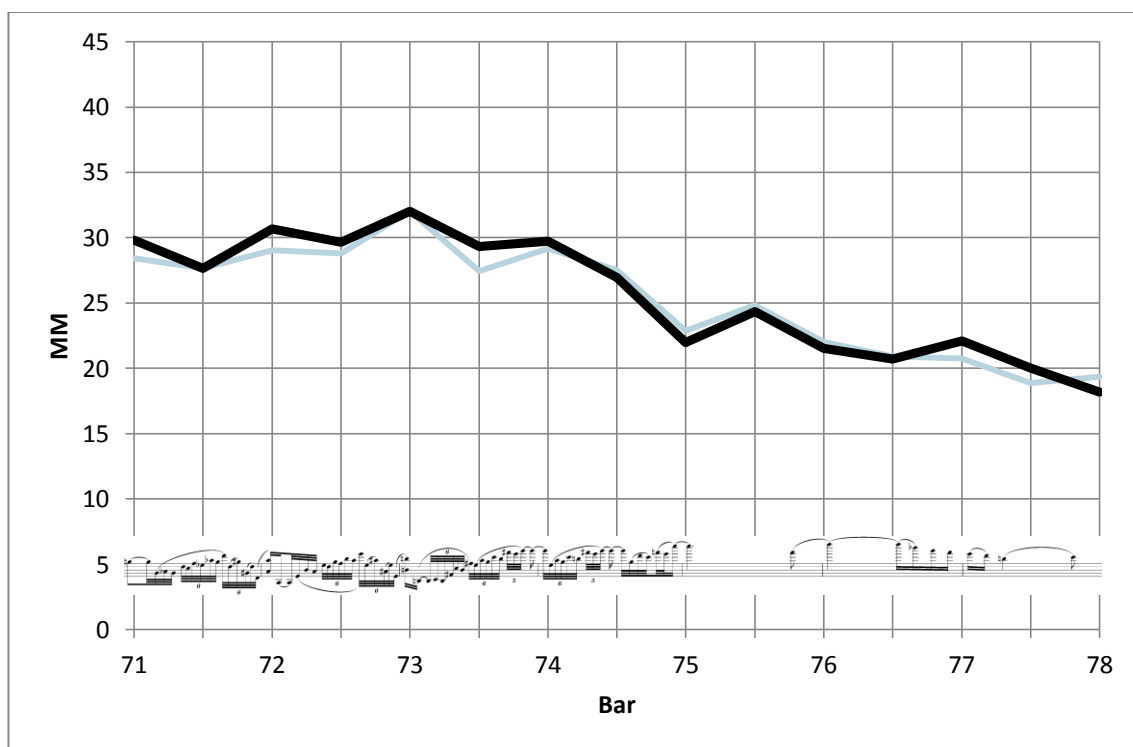


Figure 5.116 Beat data, bb. 71-78, Stern 1973.

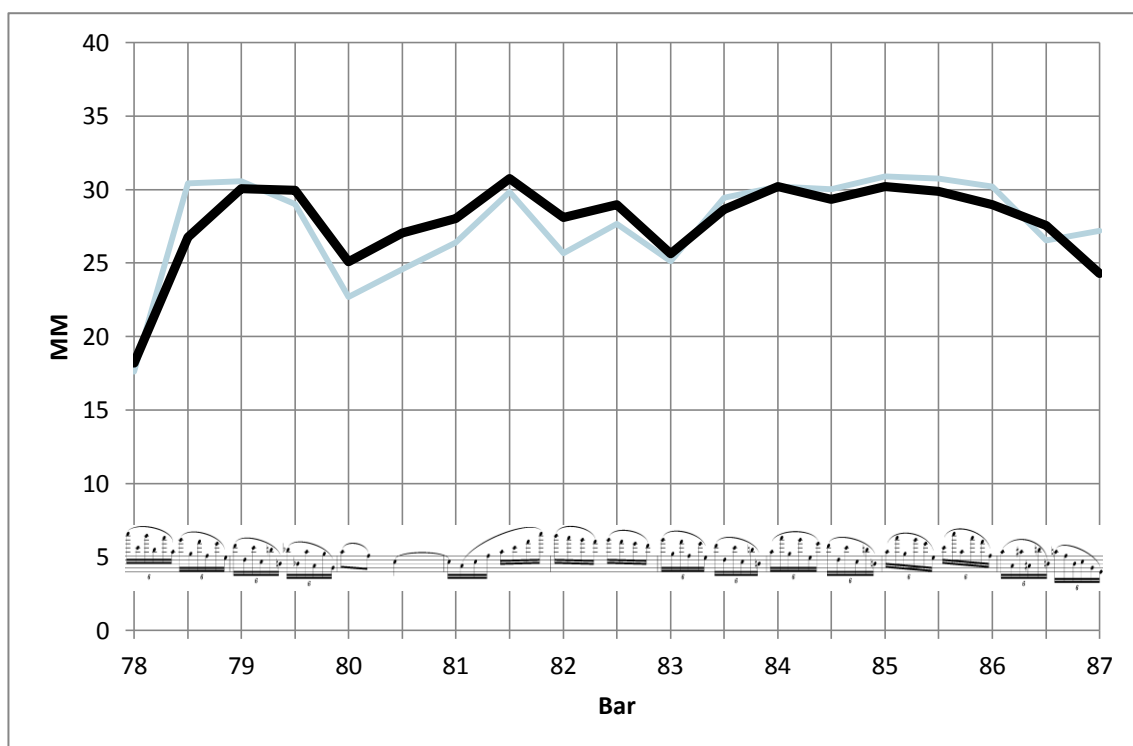


Figure 5.117 Beat data, bb. 78-87 Schneiderhan 1953.

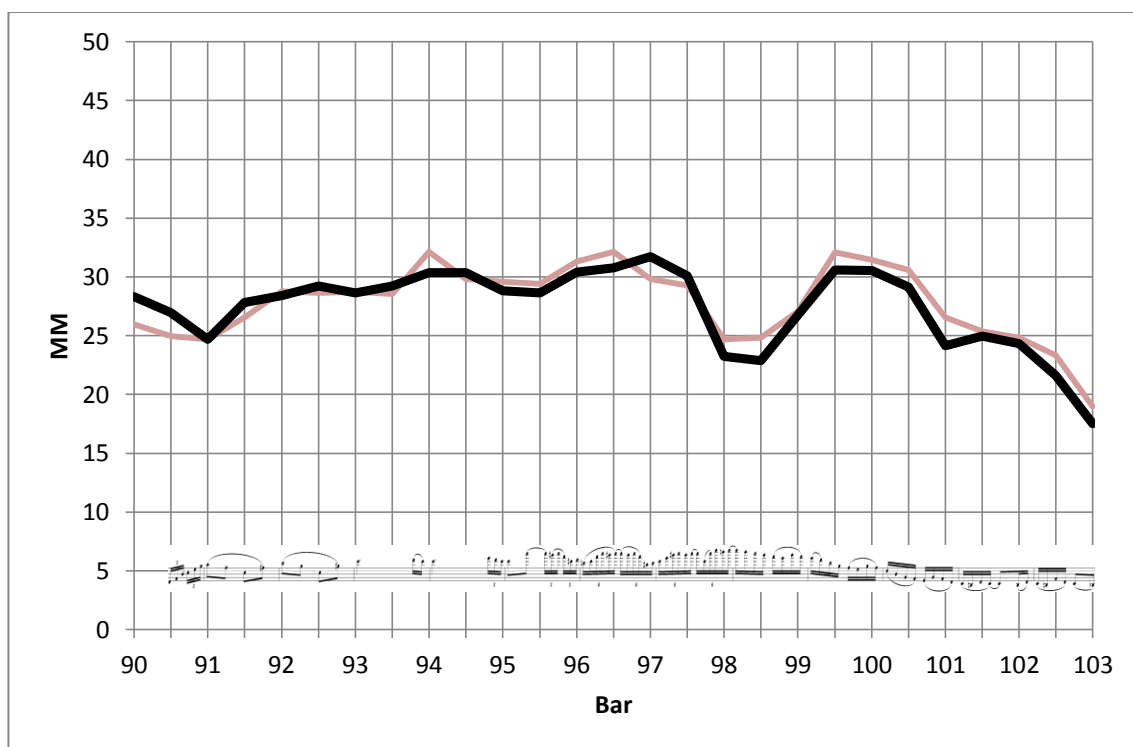


Figure 5.118 Beat data, bb. 90-103 Schneiderhan 1953.

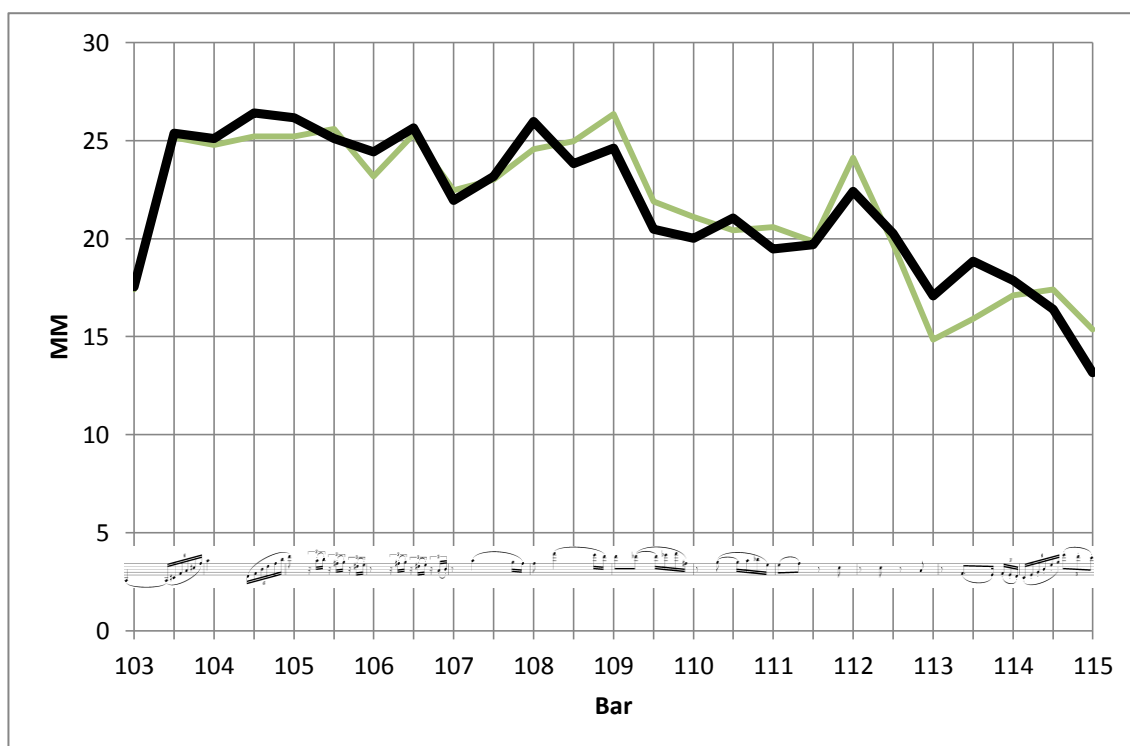


Figure 5.119 Beat data, bb. 103-115, Oistrakh 1952.

Aside from Oistrakh and Schneiderhan appearing twice, there seems to be no underlying pattern with regards to which performances compare most closely to the average; an assortment of different ages, dates of birth, nationalities and dates of recording are all represented. These performances all differ from the average to some degree and may conceivably be anomalous in other expressive areas, such as dynamics or use of *portamento*; however, aside from creating some kind of artificially synthesised performance, they represent the closest thing we have to an audible average performance. The following video example contains the excerpts to accompany Figures 5.113 to 5.119, roughly edited together in the longer sections, in order to give a taste of what this theoretical ‘average’ performance might sound like, at least in terms of timing.

Video 9.01

These average performance graphs have been used in the construction an annotated score of the movement, based on Clive Brown's Urtext edition.⁵¹ Editions of musical works might be said to assist a performer in their interpretation of a piece; sometimes this is facilitated by the addition of markings such as bowings or fingerings that offer practical solutions with regards technical issues and, particularly in the case of late nineteenth- and early twentieth-century editions, an editor often added their own expressive markings or performance instructions in line with their own stylistic conception of the piece. Conversely, modern editions frequently do exactly the opposite, by removing notational elements that did not originate from the composer – what Szell might refer to as the removing the 'thick incrustation of interpretive nuances',⁵² as is the case with the increasingly popular Urtext editions. The purpose of this annotated score is to offer a kind of 'augmented' form of notation, which acknowledges not only the work in terms of the 'clean' Urtext score but also in the way it is manifested in performance, with the idea being to assist with performers wishing to reconstruct an early twentieth-century approach.⁵³ The choice of notational markings has been made very much with the performer in mind, in order to make the score as familiar as possible to those who might find the relative complexity of a tempo graph somewhat daunting. As Rink says, 'charting tempo fluctuation can prove beneficial to performers as an act of analysis *prior to* performance, that is, while developing an interpretation,'⁵⁴ and these markings, although substantially simplified will hopefully be helpful to performers wishing to inform their own structural interpretation of the movement.

⁵¹ See appendix C, pp. 287-289 for a copy of the annotated score. A .pdf version is also included on the accompanying DVD.

⁵² Schoenberg, H. (1968) *The great conductors*, p. 252. Cited in Philip, R. (1992) *Early recordings and musical style*, p. 13.

⁵³ One might argue that this represents something of a notational regression, in that this process essentially involves adding interpretative markings to a score from which they have deliberately been removed. However, the resulting notation is designed to present the reader with a more-comprehensive picture of the work's interpretational history, not just a single editor's opinion as to how it should be performed.

⁵⁴ Rink, J. (2002) 'Analysis and (or?) performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*, p. 46.

The approximately-parabolic tempo arches that are evident in sections of the average performance are evocative of the traditional phrase marks that some composers use to indicate higher-level phrase structure, so for this reason green phrase marks have been used to indicate such sections in the score, namely those in bars 32 to 46, 56 to 60, 64 to 67, 78 to 87 and 90 to 103. It is important to note that these markings do not take into account substantial mid-phrase broadenings, most notably that around bar 98 and to a far lesser extent those in bars 58, 66 and 100. In these cases the mid-section broadening is not reflected in the green phrase markings, rather it is indicated by a red undulating line above the staff, which is a common method amongst performers for annotating a slowing that is not indicated in the score.

‘Passages of increased flexibility’, namely those in bars 48 to 50, 52 to 54, 60 to 63, 69 to 71, 98 to 103 and 107 to 111 have been notated simply with the indication ‘*rubato*’ due to the fact that there is such diversity of interpretation in these passages that suggesting just one approach would not be adequately representative. In such situations the performer may wish to examine some of the individual examples from earlier in the chapter, in order glean inspiration from this ‘menu of possibilities’.⁵⁵

3.9.8 Lower-Level Rubato

As discussed previously, we see far more differences between performers’ approaches to timing when examining music at lower structural levels. In the case of smooth beat-level tempo graphs, a smooth and regular arch shape is indicative of the performer being predominantly concerned with higher-level structure, in other words how they are ‘shaping’ a particular phrase as a whole. However, a seemingly disjunct beat-level graph lacking in discernible shapes is not necessarily indicative of a lack of conception

⁵⁵ Philip, R. (2003) ‘Brahms’s musical world: balancing the evidence’, in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*, p. 349.

with regards timing, rather it suggests that the performer is concerning themselves with the delineation of lower-level detail within the musical structure.

Older performers tend to exhibit a greater degree of flamboyancy when it comes to the use of lower-level rubato, which frequently results in irregular ‘zig-zagging’ patterns in their tempo graphs; Kreisler, Hubermann, Kulenkampff and Heifetz, who represent four of the oldest performers examined in this study, tend to demonstrate a particularly liberal attitude in regards to note length. However, as one might expect, there are a number of exceptions to this general trend. Szigeti, for instance, appears to take a fairly literal approach to rhythm, in spite of being the third-oldest of the group. Ferras and Kogan, conversely, utilise lower-level flexibility to a far greater extent than one might expect from two of the youngest performers.

These lower-level types of rubato generally fall into three categories: agogic accents, small-scale shaping and rhythmic alteration, although these categories are far from mutually exclusive.

3.9.9 *Agogic Accents*

Just as musical climaxes can be highlighted by a broadening midway through a section, so can individual notes can be ‘brought out’ in a phrase by means of agogic accents. As outlined previously, agogic accents typically occur at the following locations:

- notes that mark a harmonic change
- melodic peaks
- particularly expressive notes such as appoggiaturas or chromatic passing notes

These locations appear to loosely correspond with Riemann's aforementioned 'notes which form centres of gravity' and 'suspensions, whereby the harmonic value is rendered clearer';⁵⁶ although the variety exhibited in the placement of agogic accents between different performances highlights the fact that what is deemed a 'centre of gravity' by one performer may not be by another. In addition to these three general categories, a fourth kind of individual note lengthening is sometimes used in order to delineate a small-scale structural boundary by delaying the following note. Whereas in the above three instances the accentuation is perceived on the lengthened note, here the resulting accentuation is shifted to the following note, as a result of it being delayed. As Cook explains, 'In this instance lengthening a note gives it an emphasis; that is why downbeats are often prolonged... But lengthening an upbeat has a different effect: it emphasizes the note that follows it.'⁵⁷ This kind of lengthening can be seen as the microcosmic equivalent of a *rallentando* drawing attention to the structural boundary that follows, with the slowing here being so localised as to apply to a single note. Huron explains that, in delaying the onset of a musical event, the listener's sense of anticipation is heightened: 'A common way to increase the feeling of anticipation (and the accompanying tension) is through *delay*. By delaying the advent of the expected event, the state of anticipation can be sustained and so made more salient for a listener.'⁵⁸

Agogic accents can exhibit varying degrees of lengthening and, just as the degree of slowing at a structural boundary is related to the importance of that boundary, the degree of lengthening of an agogic accent can be varied depending on the relative importance of the note in question. This would appear to resonate with Johnstone's description of a 'delicate give-and-take in the proportionate lengths of the notes'.⁵⁹ For example, the first and fifth semiquavers in bar 34 are frequently lengthened in the manner of an agogic accent, although the first semiquaver is almost always lengthened to a greater degree than fifth as a result of it having greater expressive value. This is

⁵⁶ See chapter 1, p. 55.

⁵⁷ Cook, N. (1987) *Op. cit.*, p. 262.

⁵⁸ Huron, D. (2006) *Op. cit.*, p. 328.

⁵⁹ Johnstone, J. A. (1914) *Essentials in pianoforte playing and other musical studies*, p. 45. Cited in Philip, R. (1992) *Op. cit.*, p. 41.

indicative of what might be termed an ‘agogic hierarchy’, whereby the degree of lengthening is proportional to the note’s relative importance in the wider context of a particular phrase or section.

As this device concerns the alteration of individual notes, the possibilities for its application are enormous and, as a result, no two performances use them in quite the same manner, even within the context of a single phrase. However, there are certain points in the music where these accents frequently appear and their use is therefore more predictable; these locations have been referred to as ‘agogic hotspots’. The annotated score shows the most common locations for agogic accents in the movement, with each instance indicated by a red *tenuto*-style line, which is traditionally associated with emphasis. Notes which are frequently lengthened in order to emphasise the musical event that follows, by delaying its onset, are indicated in blue.

Of these 28 ‘hotspots’, 18 fall on strong crotchet beats within the bar and 8 fall on slightly weaker quaver beats, indicating a strong preference for placing agogic accents at metrically strong points in the bar. However, this is not simply a matter of performers preferring to accent metrically strong notes with agogic accents, rather this effect is arguably the result of Brahms’ preference for placing particularly important musical events – namely changes in harmony, melodic peaks and particularly expressive notes – at strong points in the bar.

Emphasising downbeats is a well-known practice; Fuller Maitland states in 1905 that ‘all the greatest interpreters of the best music have been accustomed to lay this kind of accent on the first note of the bar...’⁶⁰ and Sloboda similarly explains that ‘special

⁶⁰ Fuller Maitland, (1905) *Joseph Joachim*, pp. 29-30.

expressive marking of the first beat in the bar, either by timing, dynamics or articulation, is a common phenomenon.⁶¹ This is particularly true in the context of dance music, where metric clarity is of the utmost practical importance; however, in the context of a late-Romantic slow movement, explaining such accentuation is slightly more problematic. Huron argues that notes on strong beats draw the listener's attention to a greater degree than those at weak points in the bar: 'When listening to sounds, we do not pay attention equally at all moments. Instead, auditory attention is directed at particular moments in time.'⁶² J Devin McAuley similarly states that 'musical events that occur at strong metrical positions are better perceived, remembered, and reproduced than musical events that occur at weak metrical positions.'⁶³ Such explanations would seem to adequately validate the predilection of both composer and performer for emphasising strong beats in the bar, even in the more-flexible context of a Brahms slow movement. Furthermore, Huron explains that 'the downbeat isn't merely that moment when events are more likely to occur in music. The downbeat *sounds nice*. One of the simple pleasures of listening to music is hearing events on the downbeat.'⁶⁴ This suggests that not only might the listener perceive and remember events that occur on strong beats more easily, they may also enjoy this kind of accentuation.

3.9.10 *Anticipations*

Anticipation is a particularly distinctive kind of agogic lengthening that is worthy of individual mention. In general, the onset of notes that are agogically lengthened occurs when one might expect, with the extra length being added to the end of the note. In the case of the anticipation, however, all or part of this added length is added to the beginning of the note, with the result that the note begins prematurely, thus anticipating the accompaniment. Placing a note ahead of the orchestra creates a

⁶¹ Sloboda, J. (1983) 'The communication of musical metre in piano performance', p. 399.

⁶² Huron, D. (2006) *Op. cit.*, p. 176.

⁶³ McAuley, J. D. (2010) 'Tempo and rhythm', p. 193.

⁶⁴ Huron, D. (2006) *Op. cit.*, p. 184.

sense of tension between melody and accompaniment as well as an element of surprise, which add considerably to the overall expressive effect of the lengthening. For this reason, anticipations tend to occur on particularly expressive notes, such as the D-natural on the last quaver beat of bar 52, the downbeat of bar 58, the final F-sharp semiquaver in bar 64, the E-natural on the last quaver beat of bar 94 and the E-flat towards the end of bar 109. Beginning such notes early allows for agogic lengthening without necessitating a subsequent quickening in order to 'catch up'. In addition, three of these anticipations, namely those in bars 52, 58 and 64, occur on notes that represent somewhat unexpected changes in the melodic line, thus heightening the sense of surprise.

Anticipations are also used frequently on notes following short rests, as is the case with the D on the second beat of bar 48, the F-sharp at the end of bar 64 and the G-sharp following the rest in bar 65. All of these instances involve a rest mid-phrase and, in anticipating the note that follows, tension is maintained over the rest without the overall sense of momentum through the phrase being lost. Although instances of this device can be heard in a number of performances of the *Adagio*, it is not used with any great frequency or by all performers; for this reason no notated anticipations have been included in the annotated score.

3.9.11 *Melodic Dislocation*

Whereas anticipations involve the placing of a single note ahead of the accompaniment, sometimes this effect is extended so that the soloist is ahead of the orchestra for a longer period of time, resulting in what is referred to as 'melodic rubato'. To a contemporary listener this kind of dislocation between melody and accompaniment will most likely sound unintentional and be put down to poor

ensemble; this may indeed be the case in some instances, however such an effect was not always considered to be detrimental.⁶⁵

Whilst melodic rubato is relatively uncommon within the recordings utilised in this study, most likely due to this kind of rubato falling out of fashion, two notable instances occur in recordings by Huberman and Milstein, dating from 1944 and 1950 respectively. Huberman rushes ahead of the orchestra during bars 71 to 74, a passage that he and many other performers approach with an *accelerando*; however, Huberman pushes ahead to such an extent that he becomes almost half a beat ahead of the orchestra and subsequently has to wait for them to catch up. Milstein's dislocation takes place over a slightly shorter passage, during bars 107 to 108, where he similarly pushes ahead of the orchestra and thus heightens the sense of tension already inherent in the music. It may be that these instances of dislocation between melody and accompaniment represent unwanted errors; however, both the historic importance of melodic rubato and its expressive impact in both of these instances suggest that such an effect was intentional.

3.9.12 *Small-Scale Shaping*

Although agogic accents frequently occur on isolated longer notes, their influence often extends to one or more of the surrounding notes as well. Riemann's analogy of agogic accents forming a 'centre of gravity' is a highly effective one, as note figurations are often shaped around the accented note, as if the surrounding notes are being 'drawn towards' it. Such small-scale surface-level shaping can be seen as something of a middle ground between agogic accents and the larger-scale beat-level shaping that takes place across phrases and sections, although in this case the shaping occurs around or between accented notes rather than structural boundaries. The effect of

⁶⁵ See chapter 1, pp. 59-62.

both large- and small-scale tempo shaping is one of emphasis; however, both operate at different levels in the music's structural hierarchy. The purpose of one is the emphasis and therefore delineation of structural boundaries, whereas the other has the effect of emphasising individual events within a particular phrase or note figuration. Given the substantial degree of discrepancy between performers' approaches to small-scale shaping no attempt has been made to include indications to this effect in the annotated score; however, there are a number of common patterns that appear in several performances.

As discussed previously, passages of increased flexibility, involving shorter, more fragmented phrase structures, tend to involve rubato being used to delineate lower-level surface detail in the music to a greater degree, with performers shaping the passages around individual musical events, such as agogic accents and *portamenti*, rather than higher-level structural boundaries. This is true of bars 48 to 49 and 52 to 54 especially, although performers differ widely in the musical events they choose to highlight, which results in myriad variations in these passages' overall shaping.

A comparable amount of variety in small-scale shaping is also evident in bars 60 to 61 and 69 to 70, which is an almost exact transposition up a fourth. Again, performers make different choices with regards to which note constitutes the 'centre of gravity' in each bar, resulting in differences in the overall shaping. These passages also tend to exhibit an inverse correlation between pitch and note-length; in other words, performers speed up as the melodic line rises and then correspondingly slow down as it falls. This appears to correspond with Behnke and Pearce's 1893 instruction that 'ascending phrases, as a rule, should be sung *crescendo*, and with a slight quickening of speed (tempo rubato)... Descending phrases should, on the other hand, be sung *diminuendo*, and with a slight slackening of speed (tempo rubato).'⁶⁶ However, there are instances elsewhere of players broadening into melodic peaks, as is often the case

⁶⁶ Behnke, E. and Pearce, C. W. (1893) *Voice training primer*, p. 65. Cited in Philip, R. (1992) *Op. cit.*, p. 39.

in bars 33-34 and 81-82, suggesting that Behnke and Pearce's conception of rubato may not have survived for long in the twentieth century.

3.9.13 '*Rushing*' Shorter Note Figurations

The 'rushing' of shorter note figurations is a well-documented stylistic feature of early playing style, as discussed by Milsom and Philip in their respective studies of early recordings. Philip states that 'one of the most obvious features of the rhythmic style of Elgar's day was a tendency, in patterns of long and short notes, to lighten and hurry the short notes... This sort of "throwaway" rhythmic lightness was the norm in the 1920s, and it can be heard in the playing of the most highly regarded players and ensembles of the period.'⁶⁷ There are a number of locations in the *Adagio* where such rushing commonly occurs, most significantly in quicker demi-semiquaver figurations such as those in bars 48, 53, 65 and 71 to 74. In all of these cases, the rushing precedes a note that is lengthened in the manner of an agogic accent, with the preceding acceleration adding to the sense of arrival, and therefore degree of perceived accentuation, on the accented note. This type of small-scale shaping can therefore be seen as contrary to 'agogic shaping', which is characterised by slowing towards the emphasised note.

To modern ears, some of the 'messier' characteristics of early twentieth-century performing style such as rushing can all too easily be interpreted as a lack of control or poor coordination;⁶⁸ however, the practice of rushing is arguably far more in keeping with the general aesthetic of movement and musical timing than it would first appear. Huron uses the example of a bouncing ball in order to explain that timing patterns do not always have to be regular in order to be predictable:

⁶⁷ Philip, R. (1984) 'The recordings of Edward Elgar (1857-1934): authenticity and performance practice', p. 483.

⁶⁸ Philip, R. (1992) *Op. cit.*, p. 92.

Although periodicity helps listeners to form temporal expectations, periodicity is not necessary for the formation of such expectations. It is important only that the listener be experienced with the temporal structure, and that some element of the temporal pattern be predictable. An illustration of this point can be found in the expectation for “bouncing” rhythms. The sound of something bouncing is not periodic: the interbounce interval shortens as the bouncing continues. Nevertheless, listeners are able to predict, to some degree, the temporal sequence of events for a bouncing object... This means that the pleasure evoked via the prediction effect is not limited to periodic beats.⁶⁹

In the case of rushing towards an accented note, the time interval between successive note onsets becomes progressively shorter prior to arrival on the agogically lengthened note, which follows a strikingly similar pattern to that of Huron’s bouncing ball. The music ‘comes to rest’ on the lengthened note following the rushing which, just as tempo arches have been likened to the parabolic curves of Newtonian mechanics, creates a recognisable and therefore potentially pleasing association with a fundamentally natural form of movement.

There is a strong tendency for such rushing to occur in figurations involving a rising melodic contour, which one might expect given that agogic accents frequently occur at melodic peaks. This pattern correlates with Sundberg’s ‘faster uphill’ rule, in which the duration of a note is shortened if it is preceded by a lower pitched note and followed by a higher pitched one.⁷⁰

⁶⁹ Huron, D. (2006) *Op. cit.*, pp. 187-188.

⁷⁰ Sundberg, J., Askenfelt, A. and Frydén, L. (1983) ‘Musical performance: a synthesis-by-rule approach’, p. 41.

3.9.14 *Rhythmic Alteration*

Whereas most instances of small-scale rubato, such as agogic accents or the rushing of quicker note figurations, involve the application of flexibility within the confines of the original notation, occasionally rubato is applied to such a degree that rhythms are clearly perceived to have been altered. This often results in a different musical effect to that suggested by the original notation. A prime example of this that appears frequently in performances of the *Adagio* involves the alteration of triplets, whereby the first note is lengthened to such a degree that the resulting rhythm is heard thus:



Figure 5.120 Normal triplet.



Figure 5.121 Rhythmically-altered triplet.

This type of rhythmic alteration generally occurs as the result of the first note being lengthened in the manner of an agogic accent, with the following notes speeded up to compensate. There is something of a grey area into which a number of renditions fall, whereby there is a substantial lengthening of the first triplet but not to an adequate degree as to be perceived as an actual alteration of rhythm. However, clearly-altered triplets can often be heard at the following points in the movement, which all involve isolated figures rather than the longer passages of triplets that appear elsewhere: on the first quaver beat of bar 49,⁷¹ the last quaver beat of bar 52⁷² and the last quaver beat of bar 94.⁷³ The first note in each of these triplet figures tends to be particularly expressive within its respective musical context, which explains the often-pronounced degree of lengthening. In addition to this, there is a further sense of emphasis created on the note that directly follows the triplet in each case. This effect is comparable to

⁷¹ See p. 160.

⁷² See pp. 163-166.

⁷³ See p. 212.

the above-mentioned ‘rushing’ effect, albeit on a smaller scale, whereby the notes become consecutively quicker through the triplet, which results in a sense of arrival, and therefore emphasis, on the following note. This kind of ‘consequential accentuation’ is particularly effective in the context of the examples from bars 52 and 94, where the note that follows is located on the downbeat.

The four triplet examples cited above interestingly represent the only four instances of isolated triplet figures within the solo violin line during the course of the movement, with all other triplets forming part of longer figurations. This strongly suggests that some players have a preferred approach to this particular rhythm; Vos and Handel state that ‘some rhythmical patterns, like triplets, seem to have a preferred timing profile,’⁷⁴ and that would appear to be the case with a number of performances here. Drake and Palmer similarly observe that ‘a large proportion of the timing variance can be attributed to *rhythmical groups*.’⁷⁵

The quickening of short notes within dotted rhythms is another common timing pattern that involves the alteration of notated rhythm, resulting in the effect of ‘overdotting’. In contemporary musical performance the process of overdotting is most closely associated with Baroque performance practice, although here it is demonstrated in a late-Romantic context. Both Milsom and Philip identify overdotting as a common feature in early twentieth-century performing style, with Philip suggesting that the effect stems from performers’ aforementioned propensity to quicken shorter notes: ‘The tendency to shorten notes has one particularly interesting effect: it produces overdotted rhythms.’⁷⁶

⁷⁴ Vos, P. and Handel, S. (1987) ‘Playing triplets: facts and preferences’, p. 45.

⁷⁵ Drake, C. and Palmer, C. (1993) ‘Accent structures in musical performance’, p. 375.

⁷⁶ Philip, R. (1984) *Op. cit.*, p. 484.

This kind of overdotting is frequently applied in the *più largamente* passage from bar 56 to 59, which represents one of the only instances of dotted semiquaver rhythms in the movement, with the few others generally occurring within the context of longer durational values.⁷⁷ In exaggerating the dotted effect, the sense of rhythmic contrast is increased; this makes more of a feature of this divergent passage, which Brahms helps to further stand out by way of the remote key of F-sharp minor along with a notated change in tempo. The resulting musical effect of this overdotting, as well as creating contrast, is one of heightening the sense of agitation that is already inherent in dotted rhythms, and it is no coincidence that the only passage to make considerable use of this rhythm is one of the most emotionally-charged in the movement.

Irregular triplets and overdotting are two examples of rhythmic alteration which appear in a sufficient number of different performances to allow them to be categorised as common stylistic features; however, as has been demonstrated, there are many instances of rhythmic alteration that are purely idiosyncratic.

3.9.15 *Compensation*

In the case of rhythmic alterations, the shortening of quicker notes is generally in proportion to the lengthening of longer ones. Any alteration is approximately ‘balanced out’ so that the overall duration of the figure remains the same, as per Dustan’s description of ‘taking a portion of time from one note and giving it to another for the sake of expression’.⁷⁸ This can be seen as a kind of small-scale compensation, albeit imprecise, in that time is ‘borrowed’ from one or more notes and given to others. The idea of compensation is one that plays a vital role in musical timing; not only in the context of small-scale rhythmic alterations, but also with regards to higher-level structural rubato.

⁷⁷ See p. 174.

⁷⁸ Dunstan, R. (1908) *A cyclopaedic dictionary of music*, p. 347.

As discussed previously, there has been much debate amongst performers and theorists as to how compensation is, or indeed should be, applied in musical timing, with the argument essentially boiling down to a question of whether borrowed time needs to be given back and, if so, to what extent. This issue is one that has been investigated at length, most notably by Hudson, Martin, Philip and McEwan, with the general consensus being that, although compensation plays a vital role in performers' use of rubato, the borrowed time is rarely given back in its entirety and therefore the strict nineteenth-century model is not one that should be taken literally.⁷⁹ Martin states that 'it is clear that compensating rubato of the general and the accompaniment styles was not applied indiscriminately as a general law of rubato, as implied by some writers.'⁸⁰ Whilst Philip finds little evidence to support a literal theory of compensation, he suggests that the idea may refer to a less-specific notion of balance, whereby the degrees of *accelerando* and *rallentando* roughly cancel each other out within a phrase.⁸¹ McEwan argues that 'it is no doubt the realisation of the necessity for balance between the rhythmical members of the musical statement which led to the enunciation of what is called the "fundamental law" of rubato by a certain school of pianists. But whereas this "fundamental law" as stated... has no meaning, the necessity of balance is easily understood and its approximate realisations easily attained.'⁸²

Although this study does not aim to investigate compensating rubato in any great detail, particularly given the amount of research already undertaken to this effect, evidence of compensation can be observed at a variety of levels in the music's structural hierarchy. As is the case with previous empirical examinations of compensating rubato, there is no evidence to suggest that this theory is applied strictly, in terms of exact equality between acceleration and deceleration; however, there are countless instances of performers speeding up either directly before or after

⁷⁹ See chapter 1, p. 52.

⁸⁰ Martin, S. (2002) 'The case of compensating rubato', p. 127.

⁸¹ Phillip, R. (1992) *Op. cit.*, pp. 45-47.

⁸² McEwan, J. (1928) *Tempo rubato or time variation in musical performance*, p. 38.

a slowing, which strongly suggests that they are thinking in terms of compensation, even if only as a rough guideline.

At higher levels, the practice of slowing down towards the end of structural units appears largely to be exempt from rules of compensation, as such slowing is not directly preceded by any noticeable acceleration above the general tempo in any of the thirty performances. However, instances of broadening that take place mid-phrase, such as in bars 58, 66 and 98, are almost always juxtaposed with some degree of quickening, either before in preparation or following in restitution, which makes up at least some of the 'stolen' time. This kind of 'approximate' compensation can also be seen at work almost constantly at lower structural levels, in the context of agogic accents, anticipations and the small-scale shaping of individual note figurations. Notes that are lengthened are generally accompanied by those that are shortened, thus maintaining an overall sense of balance, albeit not mathematically exact.

There will inevitably be an element of human error with regards to compensation; even if a performer is attempting to preserve the overall tempo precisely, there will always be some degree of inaccuracy as a result of the limitations of human perception. However, these limitations are equally applicable to the listener, with the implication that even if a performer was capable of applying perfectly strict compensation, in all likelihood their audience would not be aware that this was taking place. One could even conjecture that the theorists and performers who advocated strict adherence to the rule of give and take may have been perceiving their own or others' playing inaccurately; mistaking a general sense of balance for mathematically-exact compensation. Indeed, there is a tendency amongst theorists to hear what they describe as well as describing what they hear.

3.9.16 *Portamento*

Although the primary focus of this study has been musical timing, it is difficult to examine lower-level rubato in this movement without considering how it relates to performers' use of *portamento*. For this reason, a number of common locations for *portamento* have also been included in the annotated score; in each instance, the slide is indicated by a straight line between notes.⁸³

Portamento and lower-level rubato are inextricably connected in terms of musical expression, in that taking extra time over an expressive slide will draw more attention to it and, contrarily, a slide will reciprocally draw more attention to an expressive slowing. As is the case with the lengthening of individual notes, *portamenti* are usually reserved for notes of particular expressive importance, which frequently results in the two expressive devices being used in conjunction.⁸⁴ Although the locations of *portamenti* differ considerably between performances, a combination of *portamento* and small-scale slowing can commonly be observed at the following points in the movement: the top B-flat following an octave leap in bar 48, the D-natural on the last quaver beat of bar 52, the A-natural (usually played as a harmonic) on the second beat of bar 53, the G-sharp downbeat in bar 58, the G-sharp on the second beat of bar 61, the D-sharp downbeat of bar 65, the C-sharp on the second beat of bar 70 and the last semiquaver C in bar 81. Although *portamenti* take a certain amount of time to accomplish, in order to physically shift from one note to the next, in the vast majority of cases it is clear that performers deliberately take extra time in order to exploit the expressive potential of the slide.⁸⁵ There is plenty of opportunity, particularly in this context of a slow movement, to reduce the impact of such slides on the general tempo, either by quickening the slide or by shortening one or more of the surrounding

⁸³ Although common locations for *portamento* have been indicated, the specific type of slide has not, given that most of these performers exhibits a highly idiosyncratic use of the device.

⁸⁴ See pp. 149, 154-156, 162, 164, 166, 172-173, 183, 188, 219 and 227.

⁸⁵ See pp. 154-155, 172-173, 183-184, 189, 215 and 219.

notes, as is generally the case with purely ‘mechanical’ shifts which are not deliberately emphasised.⁸⁶

The impact of *portamento* on the temporal fabric of the music tends to be far more substantial in recordings by older performers, who tend to use the device more frequently and are also inclined towards slower, more pronounced slides. Huberman, Kreisler, Kulenkampff and Milstein are particularly notable for their use of slow single-finger slides which, in addition to their substantial influence on musical timing, create a certain degree of rhythmic ambiguity, in that it is unclear when one note ends and the next begins.⁸⁷ Milsom and Philip concur that the period around the 1920s may have represented something of a ‘high-water mark’ in terms of *portamento* usage,⁸⁸ whereas ‘by the 1930s there were clear trends away from these early twentieth-century characteristics’.⁸⁹ Given that expressive slides are fundamentally connected with the expression of lower-level structure, this may help to explain the apparent tendency in later recordings of the *Adagio* to concentrate on higher-level structure rather than lower-level detail.

⁸⁶ See chapter 2, p. 107.

⁸⁷ See chapter 2, pp. 103-105.

⁸⁸ Milsom, D. (2003) *Theory and practice in late nineteenth-century violin performance: an examination of style in performance, 1850-1900*, p. 106.

⁸⁹ Philip, R. (1992) *Op. cit.*, p. 229.

Conclusion

This study has developed an innovative approach to the analysis of recordings, so it is appropriate to begin by evaluating this, in terms of both analysing and visually representing performers' use of rubato. Although computational analysis and close-listening represent two radically different methods of examining music, the combination has proved a successful one. Whilst a large amount of stylistic information has been gleaned through repeated listening, the use of empirical analysis has greatly facilitated the identification and examination of different manifestations of rubato, as well as lending a greater degree of objectivity to this comparative study.

The analogy of 'shaping' musical time, which plays such a prominent role in performers' discourse, is one that we see manifested in music on a variety of different levels in its structural hierarchy, from the shaping of whole sections, through that of phrases down to individual note figurations. Musical shaping is intrinsically an abstract concept, whether referring to timing or other areas of expression such as dynamics and articulation, given that sound itself does not involve any kind of visual element. Indeed, audio recordings represent arguably the least visually-oriented kind of performance, in that not even the physical act of music-making can be observed and related to the sounds that are produced. However, when sound is translated into a visual medium, in the manner of the tempo graphs and video animations utilised in this study, the musical shaping within performances become discernible in a far more accessible way.

One of the difficulties in using empirical data when analysing performance is that the resulting analytical abstractions – most commonly in the form of tempo graphs – are somewhat difficult to reconcile with the performance itself, even if one does so with score in hand. The opportunities afforded by software such as Sonic Visualiser to simultaneously hear and 'see' what is happening in the music in real-time makes it far easier to make detailed musicological observations regarding such data, as opposed to

examining it on a wholly statistical basis. By relating musical phenomena in performance to visual ones, as is case with the graphic and video examples utilised herein, one is effectively reversing the process of performance. In terms of the Western classical tradition, performance essentially involves the interpretation of a visual medium – the score – into a sonic medium, whereas the analytical methods used in performance analysis do exactly the opposite, by translating the sonic medium back into a visual one.

There is much evidence to suggest that performers think of music in terms of abstract visualisations. Aside from the use of specifically visual language such as ‘shaping the line’, performers are constantly aware of the concept of movement in music; indeed, the word ‘movement’ is itself used to classify a discrete section of a work and almost all of the language that performers use pertaining to tempo and timing, such as ‘pushing on’, ‘pulling back’ or ‘coming to rest’ is analogous with ideas of motion. Clarke furthers the idea of this vital connection:

Todd (1992), Kronman & Sundberg (1987) and Feldman, Epstein & Richards (1992) have shown that dynamic and timing functions in musical expression conform to the equations of the physical motion of objects in a gravitational field, and that the sense of natural physical motion that listeners describe in expressive performance is no accident; performers are producing those timing and dynamic functions both because the musical output directly captures the body movements that are responsible for the performance – i.e. the expressive features are indices of physical movement – and because in a more iconic and representational sense performers are aiming at the directness and power of expression that is achieved with temporal forms that follow the principles of bodily motion.¹

¹ Clarke, E. (2009) ‘The semiotics of expression in musical performance’, p. 101. Of course, bodily movement is fundamental to all aspects of performance and, given that string playing involves a particular degree of physicality, the concept of physical gesture relating to musical characterisation can be seen as especially pertinent.

The visual lines of tempo graphs, in addition to the sense of movement afforded by animated video examples, can therefore be seen as an appropriate means of considering music, both for analysts and performers.

Throughout the course of this study we have observed a wide variety of approaches to rubato. Musical time has been shown to be in an almost constant state of fluctuation, even in less flamboyant renditions, which is a phenomenon that resonates strongly with the late nineteenth- and early-twentieth century stylistic aesthetic. Mahler's assertion regarding the inadequacy of metronome-marks would appear to be particularly pertinent, as there are very few instances across all thirty performances where the tempo remains consistent from one bar to the next.²

Although every performer takes a markedly different approach to musical timing in the *Adagio*, this remarkable disparity can, in itself, be seen as a unifying characteristic of performing style during this period. Milsom and Philip make similar observations in their investigations into early twentieth-century performing style, with Milsom describing 'a tremendous degree of variation in approach'.³ Philip observes that 'early twentieth-century rubato is extremely varied... The three main elements – *accelerando-rallentando*, melodic rubato, and *tenuto* – are all used together, and each performance has a characteristic way of using them'.⁴ This variety evident in performance at the very beginning of the twentieth-century appears to have endured to a considerable extent throughout the period encompassed by this study, which is unsurprising considering that many of these performers' formative years were around the beginning of the century. Dunsby discusses 'the late-Romantic taste for imposing "personal" readings, or "interpretations" in Schenker's sense of the word'⁵ and this concept of individuality, considered of such importance to the nineteenth-century musical aesthetic, clearly survived well into the following century. The extent of

² Bauer-Lechner, N. (1923) *Erinnerungen an Gustav Mahler*, p.46.

³ Milsom, D. (2003) *Theory and practice in late nineteenth-century violin performance: an examination of style in performance, 1850-1900*, p. 173.

⁴ Philip, R. (1992) *Early recordings and musical style*, p. 69.

⁵ Dunsby, J. (1989) 'Performance and analysis of music', p. 8.

individuality stems largely from performers' markedly idiosyncratic approach to timing at lower levels within the musical structure; in spite of the common patterns exhibited in patterns of higher-level shaping, every player can be seen to exhibit their own 'stylistic fingerprint', based on their use of agogic accents, low-level shaping, *portamento* and rhythmic alteration.⁶

In contrast to the diversity displayed between different performers, the similarity between multiple interpretations by the same artist is equally striking. This phenomenon also offers something of an insight into act of interpretation itself. Interpretation has often been considered to happen, at least to some degree, on the spur of the moment: a rather romantic notion of performance that has partially endured into the twenty-first century. Auer argues that 'the violinist is characteristically so dependent on the mood of the moment, the accidental influence of temper and disposition, that the same musician seldom plays the same phrase twice in exactly the same manner.'⁷ Whilst strictly correct, Auer would perhaps be somewhat surprised as to how similar these performances are; this evidence certainly demonstrates that the 'mood of the moment' is not as crucial a factor as he suggests. Mahler's view that 'here we are concerned with something living and flowing that can never be the same even twice in succession', although fundamentally accurate, is similarly misleading and seems to further a romantic ideal rather than accurately reflecting the degree of interpretational consistency with which performers appear to approach music.⁸ The irrefutable evidence provided by empirical analysis of these multiple performances would seem to confirm that the majority of interpretation, both in terms of higher-level structural delineation and lower-level expression of detail, must happen well before the performer steps out on stage or into the recording studio. Although this observation appears somewhat obvious, especially given the amount of time a performer devotes to a work's preparation compared to the time

⁶ All of the performances in this study have been from 'mature' artists, who clearly have a pre-formed conception in their interpretation of the piece. By examining performances of other repertoire from the beginning of these players' careers, one might be able to observe the development of these 'fingerprints' over the course of their formative years.

⁷ Auer, L. (1921) *Violin playing as I teach it*, p. 73.

⁸ Bauer-Lechner, N. (1923) *Op. cit.*, p. 46. Mahler, unlike Auer, was never afforded the opportunity to listen back to his performances on record, in which case he might have noticed a greater degree of similarity than expected.

they subsequently spend performing it, it raises further questions regarding the extent to which performers influence each other's interpretations through collaboration. With its primary focus being soloists, this comparative study concentrates on concerto repertoire, in which there is arguably less interpretive interplay between performers than in other genres such as chamber music;⁹ however, conductors' apparent lack of influence over the larger-scale shaping of phrases and sections still comes as something of a surprise. Unfortunately, there have been no instances in this study of a conductor recording the piece more than once, in which case this assertion could be made with a greater degree of confidence. Further investigation of this phenomenon in an alternative context – for instance, the same violinist playing a Brahms sonata with different pianists – would conceivably be more fruitful in terms of determining to what extent performers adapt their style of delivery when engaging with other musicians.

The use of rubato in these recordings appears roughly to correspond with the various theoretical writings examined in chapter one, but with a few notable exceptions. Unsurprisingly, there is very little evidence of the older 'melodic' type of rubato being used in the true sense of the definition; however, there are frequent examples of such dislocation between melody and accompaniment occurring on a much smaller scale in the form of anticipations. This 'earlier' rubato seems to have fallen out of fashion, at least in the context of violin playing, which follows the general pattern exhibited in Milsom and Philip's studies of earlier recordings. Philip observes a 'process of tidying up performance', in which 'ensemble became more tightly disciplined; pianists played chords more strictly together, and abandoned the old practice of dislocating melody from accompaniment.'¹⁰ In terms of theories regarding compensation, although a general sense of balance is inherent across all of the performances, both in the form of *accelerando-rallentando* shaping of phrases and lower-level 'give and take' in the

⁹ See chapter 2, p. 96.

¹⁰ Philip, R. (2004) *Performing music in the age of recording*, p. 232.

alteration of rhythm, there is little evidence to suggest that the strict compensatory model was adhered to literally during the period encompassed by these recordings.

Although it would be rather precarious to make stylistic observations regarding the period as a whole, given that this study is confined solely to performances of a single work, these performances of the *Adagio* also appear to exhibit something of a change in priorities with regards to structural interpretation. Whereas older players tend to utilise lower-level rubato to a considerable extent, younger players generally appear to be more concerned with the expression of higher-level structure.¹¹ There are, somewhat inevitably, a number of exceptions; for instance, Szigeti seems to take a fairly literal approach to rhythm, whereas Ferras is particularly flamboyant when it comes to the shaping of individual note figurations. In spite of such outlying cases, however, this pattern of change is exhibited in the majority of recordings, which frequently results in the tempo graphs from older performers appearing more variable than those of younger artists. This phenomenon has also been observed by Repp, who describes a 'slight tendency for older artists to exhibit more unusual timing patterns'.¹² Philip similarly explains that 'old-fashioned playing uses rubato to create a sort of relief, in which significant details are made to stand out'.¹³ However, it has been demonstrated that the appearance of beat-level tempo graphs is not a wholly reliable method for examining the extent of lower-level rubato, as compensation can allow for such idiosyncrasies whilst maintaining the higher-structural shaping of the passage as a whole. Kreisler is particularly notable in this regard, in that the large amount of flexibility he employs within shorter note figurations tends not to be noticeable in his relatively smooth beat-level tempo graphs.

This perceived shift away from the emphasis of lower-level detail is the combined result of a number of more-specific changes taking place during the period: most

¹¹ Again, 'older' and 'younger' is here referring specifically to performers' date of birth, not their age at the time of recording.

¹² Repp, B. (1998) 'A microcosm of musical expression. I. Quantitative analysis of pianists' timing in the initial measures of Chopin's Etude in E major', p. 1095.

¹³ Philip, R. (1992) *Op. cit.*, p. 69.

notably an increasingly literal approach to rhythm and a reduction in both the frequency and prominence of *portamento*. Day observes that ‘the interpretation of rhythm has become ever more literal’¹⁴ and Milsom correspondingly states that ‘older players seem to exercise the most bizarre rhythmic changes’.¹⁵ Given that performers exhibit the highest degree of idiosyncrasy at lower structural levels, these changes have led to something of a ‘standardisation’ of approach in later recordings. Far fewer options are available to a performer in terms of delineating structure at a higher level, therefore this apparent move away from lower-level expression inevitably results in a greater degree of similarity between performances. Repp’s assertion that ‘timing is becoming more typical or mainstream, which is in agreement with many critical writings on modern performance practice’¹⁶ therefore holds good in a general sense; however, a large amount of lower level rubato can still be observed in certain younger players, most notably Ferras and Kogan.

A number of musicologists have summarised the aforementioned trend as a general ‘tidying up’ of performance,¹⁷ which reflects a change in emphasis from the expression of musical character towards rhythmical accuracy and tighter ensemble. A number of explanations for this have been offered, one of which is the influence of recordings themselves. Mark Katz refers to this phenomenon as the ‘phonograph effect’, citing a number of examples from differing musical contexts in making the point that recording technology does not only provide an aural record of music-making, it also leads performers to fundamentally change their practices.¹⁸ The sudden availability of recorded performances around the beginning of the twentieth century, facilitated by new technological developments that allowed for the mass-production of gramophone records, made it possible for musicians to listen to and, therefore, potentially influence each other to an extent that was previously impossible. Violinists such as Heifetz certainly raised expectations regarding consistency of technique and intonation to unprecedented levels and, in doing so, put pressure on other performers to follow suit.

¹⁴ Day, T. (2000) *A century of recorded music*, p. 150.

¹⁵ Milsom, D. (2003) *Op. cit.*, p. 183.

¹⁶ Repp, B., *Op. cit.*, p. 1095.

¹⁷ Philip, R. (2004) *Op. cit.*, p. 232.

¹⁸ Katz, M. (2004) *Capturing sound*, p. 1.

The violinist Mischa Elman comments on this changing emphasis in a 1952 television interview:

The old masters such as Ysaÿe and Kreisler... gave great pleasure to their audiences. They moved people with their messages, and to attend one of their recitals was an experience never to be forgotten. Most of the younger generation play exceedingly well, but lack individuality, colour and imagination. It is as if they were mass-produced at a factory... Today we turn out musicians by the thousands, like automobiles and, it seems, for the main purpose of playing as many notes as possible.¹⁹

Although this represents the view of an artist whose popularity was waning at the time, Eric Wen corroborates the idea from a slightly more objective standpoint, stating that 'by the late twentieth century the general technical standards of the average player had reached a uniformly high level internationally.'²⁰ The influence of recordings, in combination with a more-general trend towards globalisation due to substantial advancements in other technologies such as communication and air travel, arguably played a major role in standardising performances.

The influence of composers and their output should not go unrecognised. The twentieth-century change towards interpretational conservatism, led by composers such as Stravinsky and Ravel and assisted from the podium by the likes of Toscanini and Weingartner, actively discouraged interpretive input that originated from anywhere other than the score. Given that the majority of rubato, particular that at a lower level, is not indicated by the notation, it is therefore unsurprising that flexibility of tempo became used with greater restraint. Stravinsky and Ravel's respective compositional styles represented something of a departure from the late-Romantic 'emotional' tradition; however, the growing acceptance of such new styles of music into the mainstream will no doubt have influenced the general aesthetic with regards to rubato.

¹⁹ Roth, H. (1997) *Violin virtuosos: from Paganini to the 21st century*, p. 86.

²⁰ Wen, E. (1992) 'The twentieth century', in Stowell, R. (ed.) *The Cambridge companion to the violin*, p. 89.

Historical issues aside, the evidence presented in this study will hopefully be of interest to performers as well as musicologists. Late-Romantic music, as we have seen, presents the performer with ‘particular temporal problems’²¹ of structural expression, and a number of different methods have been demonstrated as to how these performers create a sense of cohesion both within and between different levels in the music’s structural hierarchy. In terms of reconstructing an ‘inter-war’ playing style, it is clear that the articulation of lower-level detail played a far greater role in interpretation than it does today. To this end, expressive devices pertaining to small-scale rubato, such as agogic accents, rhythmic alteration and *portamento*, have been categorised and examined in detail, with a view to ‘informing’ performers who may wish to assimilate some or all of these stylistic traits into their own playing.

The concept of an ‘average’ performance is illuminating in a number of ways. Most obviously, it shows us the most common timing pattern across all thirty performances, thus demonstrating the way in which performers tend to conceive the movement structurally. However, the reason that this theoretical performance highlights the underlying structure so clearly is that the averaging process efficiently removes the majority of localised idiosyncrasies, resulting in a tempo contour that is far more regular in shape than in any one of the thirty performances. Although this process is useful in its own right, by stripping away these idiosyncrasies we are negating one of the defining characteristics of performing style during this period: that element of individual expression. Wolfgang Schneiderhan comes closest to the average with his 1953 performance, which perhaps helps to explain why he has featured so little in this study up until now. Although it would be grossly unfair to label Schneiderhan’s performance uninteresting, it is certainly characterised by a particularly literal approach to rhythm; when compared to the other recordings here, some might argue that the lack of detail in his use of rubato leaves this rendition somewhat lacking in character. Schneiderhan’s performance sounds, at least to this author’s ears, very

²¹ Rink, J. (1999) ‘Translating musical meaning: the nineteenth-century performer as narrator’, in Cook, N. and Everist, M. (eds.) *Rethinking music*, p. 218.

modern, which is arguably due to a combination of subtly-executed changes of position and a predominantly higher-level approach to rubato. Aside from his *vibrato*, which is rather fast by modern standards and has the unusual quality of wavering slightly in terms of audible pitch during longer notes, this kind of interpretation would not seem stylistically out of place in a contemporary performance.

The somewhat experimental annotated score has been designed very much with the performer in mind, in order to impart some of this information in a more familiar format than tempo graphs or other such analytical abstractions. Whilst much of the more-detailed lower-level use of rubato examined in the comparative study is too complex and varied to usefully represent in a notational form, this score may prove useful as a point of departure. Given the importance of individuality in the late-nineteenth and early-twentieth century stylistic aesthetic, it would arguably be most appropriate for any such specific instructions to be omitted, in order for the performer to be able to formulate their own expressive approach to the music. However, a number of suggestions for low-level rubato have been notated at points where something of a common approach has been observed.

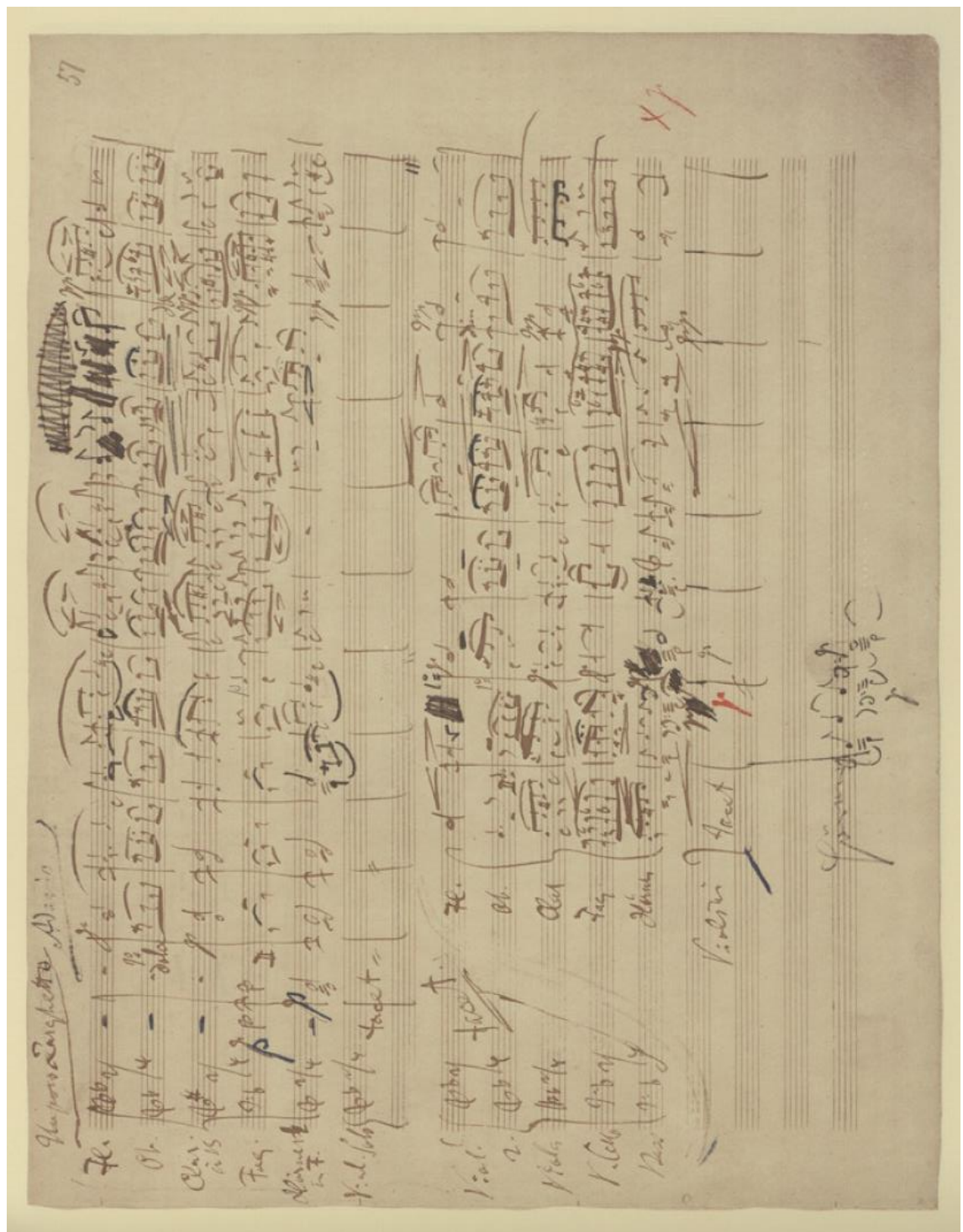
The research presented here pertaining to rubato has focussed around performances of a single movement, so perhaps the most logical continuation of such work would be to examine the same performers' approaches to other repertoire, in order to see how their style of delivery compares. Given the versatility of these analytical methods, one could feasibly extend the scope of study in a number of directions: for example, to include other instrumentalists, singers and conductors, or by examining recordings from a different era. Rubato is just one many expressive devices that play a part in musical interpretation; although this study has concentrated its efforts on the examination of musical timing, it is clear that all of these individual elements, such as dynamics, *vibrato* and *portamento*, work together in order to determine the overall effect of a particular phrase. It would certainly be possible to apply empirical analysis to these other areas of expression, for instance by measuring the speed and depth of

vibrato, or changing dynamic intensity, which could offer a clearer picture as to how these elements relate to one another in performance.

Although specialised analytical computer software such as Sonic Visualiser is currently only really of interest to musicologists, in the future, performers might utilise comparable methods in order to scrutinise their own playing. Indeed, the use of technology plays an increasingly significant role in musicians' practice and a dizzying array of devices and software are available, ranging from more-traditional metronomes and sound recorders through to a mobile phone 'app' called 'Scale Helper' that can advise you as to your accuracy of intonation.²² Although such gadgetry is currently geared primarily towards encouraging children to practice, it is not unreasonable to conjecture that at some point in the future performers may be able to analyse their own use of rubato using a similar method. Just as twentieth-century performing style has been shaped by the technology that was designed to capture it, other kinds of technology may well prove highly influential on performance practices of the future.

²² 'Scale Helper' is currently available for Apple devices through the App Store.

Appendix A



Facsimile of Brahms' autograph score of his Violin Concerto, Op. 77, Adagio (opening).

Appendix B

List of video examples

Video no.	Type of data and recordings featured	Page no.
1.01	Beat data, bb. 32-46, De Vito 1955	135
1.02	Beat data, bb. 32-46, Stern 1973	136
1.03	Beat data, bb. 32-46, Kulenkampff 1937	137
1.04	Beat data, bb. 32-46, Milstein 1954	138
1.05	Beat data, bb. 32-46, Francescatti 1958	139
1.06	Beat data, bb. 32-46, Martzy 1954	140
1.07	Beat data, bb. 32-46, Kreisler 1936	141
1.08	Beat data, bb. 32-46, Menuhin 1949	142
1.09	Beat data, bb. 32-46, Heifetz 1939	147
1.10	Semiquaver data, bb. 43,2-44, Kreisler 1936	150
1.11	Semiquaver data, bb. 43,2-44, Kogan 1953	151
1.12	Semiquaver data, bb. 43,2-44, Oistrakh 1961	152
1.13	Semiquaver data, bb. 33-34, Milstein 1950	153
1.14	Semiquaver data, bb. 33-34, Francescatti 1958	154
1.15	Semiquaver data, bb. 33-34, Heifetz 1939	155
2.01	Beat data, bb. 48-49, Kreisler 1936, Neveu 1945, Oistrakh 1952 and Szeryng 1967	158
2.02	Demisemiquaver data, b. 48,2, Kreisler 1927	159
2.03	Demisemiquaver data, b. 48,2, Huberman 1944	160
2.04	Demisemiquaver data, b. 48,2, Heifetz 1955	161
2.05	Demisemiquaver data, b. 48,2, Martzy 1954 and Menuhin 1958	162
2.06	Triplet semiquaver data, b. 49,1, Martzy 1954, Milstein 1950, Oistrakh 1961 and Szeryng 1967.	164
2.07	Note data, b. 49, Menuhin 1949	165
3.01	Note data, bb. 52-54, Menuhin 1949	167
3.02	Note data, bb. 52-54, Kreisler 1936 and Huberman 1944	169

3.03	Note data, bb. 52-54, Heifetz 1939 and Milstein 1960	170
4.01	Beat data, bb. 56-63, De Vito 1955	172
4.02	Beat data, bb. 56-63, Heifetz 1939	173
4.03	Triplet semiquaver data, bb. 61-62, Ferras 1953, Heifetz 1939, Kogan 1953, Milstein 1954, Oistrakh 1952 and Szeryng 1967	175
4.04	Note data, bb. 62-63, Ferras 1953, Francescatti 1958, Milstein 1954 and Stern 1973	178
5.01	Beat data, bb. 64-68, De Vito 1955, Kreisler 1927, Kukenkampff 1937, Martzy 1954 and Neveu 1945	182
5.02	Beat data, bb. 64-68, Grumiaux 1958, Heifetz 1955, Milstein 1950 and Oistrakh 1952	183
5.03	Beat data, bb. 64-68, Francescatti 1958	184
5.04	Beat data, bb. 64-66, Ferras 1954, Heifetz 1955, Martzy 1954, Menuhin 1949, Milstein 1950 and Renardy 1948	185
5.05	Demisemiquaver data, b. 65, Ferras 1954 and Heifetz 1955	186
5.06	Triplet semiquaver data, b. 66,2, Ferras 1953, Francescatti 1958, Menuhin 1949	188
5.07	Turn in b. 66, Ferras 1954, Grumiaux 1958 and Renardy 1948	189
5.08	Lengthened demisemiquavers, bb. 67-68, Heifetz 1939	190
5.09	Lengthened demisemiquavers, bb. 67-68, Milstein 1954	191
5.10	Triplet/sextuplet semiquaver data, bb. 69-70, Heifetz 1939 and 1955	192
5.11	Triplet/sextuplet semiquaver data, bb. 69-70, Milstein 1960,	193
5.12	Triplet/sextuplet semiquaver data, bb. 69-70, Martzy 1954	194
5.13	Triplet/sextuplet semiquaver data, bb. 69-70, Stern 1973 and Renardy 1948	195
5.14	Beat data, bb. 71-78, Kreisler 1927 and Szeryng 1967	197
5.15	Beat data, bb. 71-78, Huberman 1944, Kogan 1953 and Neveu 1945	198
5.16	Beat data, bb. 71-78, Francescatti 1958	199
5.17	Beat data, bb. 71-78, Menuhin 1949 and Schneiderhan 1953	200
5.18	Note data, bb. 71-72, Ferras 1953	201
5.19	Demisemiquaver triplet data, bb. 73-74, Ferras 1954, Grumiaux 1958 and Kreisler 1927	202

5.20	Beat data, bb. 71-78, Renardy 1948 and Szigeti 1928	203
5.21	Beat data, bb. 71-78, Kreisler 1936 and Neveu 1945	204
5.22	Semiquaver data, bb. 76-77, Menuhin 1958	204
6.01	Beat data, bb. 78-87, Ferras 1953, Neveu 1945 and Szigeti 1928	206
6.02	Semiquaver data, bb. 81-82, Huberman 1944, Kogan 1958, Kulenkampff 1937, Oistrakh 1961 and Szeryng 1967	207
6.03	Beat data, bb. 83-87, Heifetz 1939	209
6.04	Sextuplet semiquaver data, bb. 83-87, Oistrakh 1970	209
6.05	Sextuplet semiquaver data, bb. 85-87, Ferras 1953 and Kreisler 1936	210
7.01	Beat data, bb. 90-103, Milstein 1960, Oistrakh 1955 and Schneiderhan 1953	214
7.02	Beat data, bb. 90-103, Grumiaux 1958, Heifetz 1955, Martzy 1954, Menuhin 1958 and Neveu 1945	215
7.03	Beat data, bb. 90-103, De Vito 1955, Kogan 1953, Kreisler 1927 and Szigeti 1945	216
7.04	Quaver data, bb. 91-92, Kulenkampff 1937	217
7.05	Triplet/sextuplet semiquaver data, bb. 95-97, Ferras 1954, Heifetz 1955, Huberman 1944, Kogan 1953, Kreisler 1927 and Milstein 1954	218
7.06	Beat data, bb. 90-103, Francescatti 1958 and Stern 1973	221
7.07	Semiquaver data, bb. 98-101, Heifetz 1955 and Kreisler 1936	222
7.08	Semiquaver data, bb. 98-101, Kulenkampff 1937, Oistrakh 1955 and Szigeti 1945	223
7.09	Semiquaver data, bb. 98-101, selected performances	224
8.01	Beat data, bb. 103-115, Milstein 1950	227
8.02	Altered rhythms in bb. 107-108, Milstein 1950 and Kreisler 1927	228
8.03	Anticipation in b. 109, Kogan 1958, Menuhin 1949 and Szigeti 1928	228
8.04	Sextuplet semiquaver data, bb. 103-104, Kreisler 1927	228
8.05	Alternative sextuplet semiquaver data, bb. 103-104, as performed by Kreisler 1927	230
8.06	Altered triplet in b. 113, Ferras 1953	231
9.01	Reconstructed 'average' performance	253

Appendix C

Annotated Score

Konzert

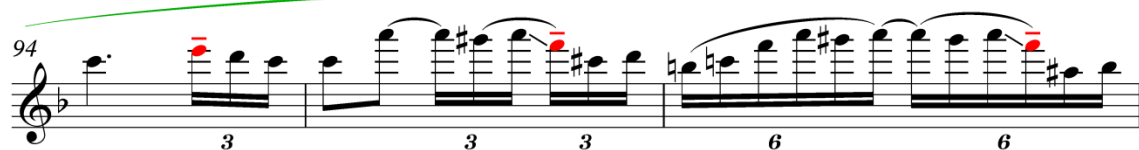
op.77

Johannes Brahms
ed. Edward Cross

Adagio

The annotated score for the Adagio movement of Brahms' Concerto in D minor, Op. 77, is presented in a single system. The score is in 2/4 time and features various performance markings and fingerings. The annotations include:

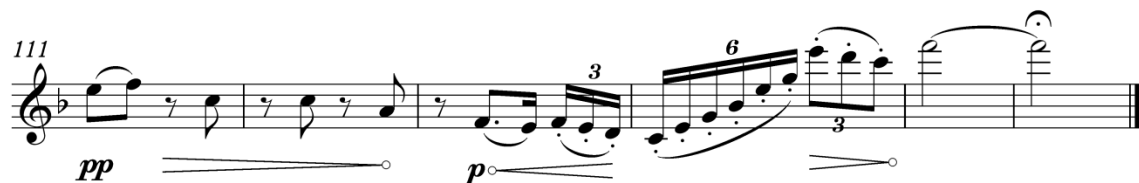
- 31**: Measure number.
- p dolce***: Dynamic and articulation marking.
- 37**: Measure number.
- 42**: Measure number.
- tr***: Trill marking.
- p***: Dynamic marking.
- 48**: Measure number.
- rubato***: Rubato marking (indicated by a red dashed line).
- 3**: Triplet marking.
- 2**: Measure number.
- p***: Dynamic marking.
- 53**: Measure number.
- 5**: Quintuplet marking.
- 3**: Triplet marking.
- ritard***: Ritardando marking.
- f espr.***: Dynamic and articulation marking.
- 58**: Measure number.
- rubato***: Rubato marking (indicated by a red dashed line).
- p***: Dynamic marking.
- 3**: Triplet marking.
- 6**: Sextuplet marking.
- 62**: Measure number.
- dolce***: Articulation marking.
- 3**: Triplet marking.
- 6**: Sextuplet marking.
- p***: Dynamic marking.



rubato



rubato



Bibliography

Abbate, C. (2004) 'Music: drastic or gnostic?', *Critical Enquiry*, 30(3), pp. 505-536.

Auer, L. (1921) *Violin playing as I teach it*. Reprint, New York: Dover, 1980.

Bauer-Lechner, N. (1923) *Erinnerungen an Gustav Mahler*. Translated by D. Newlin. Reprint, London: Faber Music, 1980.

Bériot, C. de (1876) *Méthode de violon*, Op. 102. Translated by F. Phipson. Mainz: Les Fils de B. Schott.

Berry, W. (1989) *Musical structure and performance*. New Haven and London: Yale University Press.

Blom, E. (1938) *Beethoven's Piano Sonatas discussed*. Reprint, New York: Da Capo Press, 1968.

Blum, D. (1977) *Casals and the art of interpretation*. Berkeley: University of California Press.

Boult, A. (1970) 'Interpreting 'The Planets'', *Musical Times*, 111(1525), pp.263-264.

Bowen, J. (1993) 'The history of remembered innovation: tradition and its role in the relationship between musical works and their performances', *The Journal of Musicology*, 9(2), pp. 139-173.

Bowen, J. (1993-4) 'A computer-aided study in conducting', *Computing in Musicology*, 9, pp. 93-103.

Bowen, J. (1996) 'Performance practice versus performance analysis: why should performers study performance?', *Performance Practice Review*, 9(1), pp. 16-35.

Bowen, J. (1999) 'Finding the music in musicology: performance history and musical works', in Cook, N. and Everist, M. (eds.) *Rethinking music*. Oxford: Oxford University Press, pp. 424-451.

- Brown, C. (2003) 'Joachim's violin playing', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*. Cambridge: Cambridge University Press, pp. 48-98.
- Butt, J. (2002) *Playing with history*. Cambridge: Cambridge University Press.
- Clarke, E. (1989) 'Mind the gap: formal structures and psychological processes in music', *Contemporary Music Review*, 3(1), pp. 1-15.
- Clarke, E. (1995) 'A semiotic perspective on expression and meaning in performance', *Society for Music Theory Annual Meeting*. The American Musicological Society and the Centre for Black Music Research, New York, 5 November.
- Clarke, E. (2009) 'The semiotics of expression in musical performance', *Contemporary Music Review*, 17(2), pp. 87-102.
- Cook, N. (1987) 'Structure and performance timing in Bach's C major Prelude (WTC1): an empirical study', *Music Analysis*, 6(3), pp. 257-272.
- Cook, N. (1995) 'Music minus one: rock, theory and performance', *New Formations*, 27, pp. 23-41.
- Cook, N. (1995) 'The conductor and the theorist: Furtwängler, Schenker and the first movement of Beethoven's Ninth Symphony', in Rink, J. (ed.) *The practice of performance*, Cambridge, Cambridge University Press, pp. 105-125.
- Cook, N. (1999) 'Analysing performance and performing analysis', in Cook, N. and Everist, M. (eds.) *Rethinking music*. Oxford: Oxford University Press, pp. 239-261.
- Cook, N. (2005) 'Towards the complete musicologist', *International Conference on Music Information Retrieval*. Queen Mary, University of London, London, 11 September.
- Cook, N. (2009) 'Changing the musical object', in Blazekovic, Z. (ed.) *Music's intellectual history*. New York: RILM, pp. 775-790.
- Cooke, J. (1913) *Great pianists on piano playing*. Philadelphia: Presser.
- Creighton, J. (1974) *Discopaedia of the violin*. Toronto: University of Toronto Press.

- Day, T. (2000) *A century of recorded music*. New Haven and London: Yale University Press.
- Desain, P. and Honing, H. (1993) 'Tempo curves considered harmful', in Kramer, J.D. (ed.) 'Time in contemporary musical thought', *Contemporary Music Review*, 7(2). pp. 123-138.
- Dolmetsch, A. (1915) *The interpretation of the music of the XVIIth and XVIIIth centuries*. Reprint, London: Novello, 1961.
- Donington, R. (1980) 'Tempo rubato' in Grove, G. and Sadie, S. (eds.) *New Grove dictionary of music and musicians: Vol. 16*. London, Macmillan, p.292.
- Drake, C. and Palmer, C. (1993) 'Accent structures in musical performance', *Music Perception*, 10(3), pp. 343-378.
- Dunsby, J. (1989) 'Performance and analysis of music', *Music Analysis*, 8(1), pp. 5-20.
- Dunsby, J. (2002) 'Performers on performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*. Cambridge: Cambridge University Press, pp. 225-236.
- Dunstan, R. (1908) *A cyclopaedic dictionary of music*. Reprint, New York: Da Capo Press, 1973.
- Ffrangcon-Davies, D. (1906) *The singing of the future*. London: John Lane.
- Flesch, C. (1957) *Memoirs*. Translated by H. Keller. Reprint, Harlow: Bois de Boulogne, 1973.
- Flesch, C. (1960) *Violin fingering: its theory and practice*. Translated by B. Schwarz. London: Barrie & Rockliff, 1966.
- Fox Strangways, A. (1928) 'Tempo rubato' in Grove, G. (ed.) *A dictionary of music and musicians, third edition: Vol. 4*. London: Macmillan, p. 465.
- Fuller Maitland, (1905) *Joseph Joachim*. London: J. Lane.
- Gal, H. (ed.) (1965) *The musician's world: letters of the great composers*. London: Thames and Hudson.

- Garcia, M. de (1840/1847) *Traité complet de l'art du chant* (2 vols). Revised and translated by Paschke, D. V. as *A complete treatise on the art of singing*. New York: Da Capo Press, 1972.
- Hofmann, J. (1920) *Piano playing with piano questions answered*. Philadelphia: Theodore Presser.
- Howatt, R. (1995) 'What do we perform?', in Rink, J. (ed.) *The practice of performance*, Cambridge, Cambridge University Press, pp. 3-20.
- Hudson, R. (1994) *Stolen time: the history of tempo rubato*. Oxford: Oxford University Press.
- Huron, D. (2006) *Sweet anticipation*. Massachusetts: M.I.T. Press.
- Joachim, J and Moser, A. (1902-5) *Violinschule* (3 vols). Translated by A. Moffat. Berlin: Simrock.
- Johnson, P. (2002) 'The legacy of recordings', in Rink, J. (ed.) *Musical performance: a guide to understanding*. Cambridge: Cambridge University Press, pp. 197-212.
- Johnstone, J. A. (1910) *The art of teaching pianoforte playing*. London: W. Reeves.
- Katz, M. (2004) *Capturing sound*. London: University of California Press.
- Kravitt, E. (1973) 'Tempo as an expressive element in the late-Romantic lied', *The Musical Quarterly*, 59(4), pp. 497-518.
- Lawson C. and Stowell, R. (1999) *The historical performance of music: an introduction*. Cambridge: Cambridge University Press.
- Lester, J. (1995) 'Performance and analysis: interaction and interpretation', in Rink, J. (ed.) *The practice of performance*, Cambridge: Cambridge University Press, pp. 197-216.
- Long, M. (1971) *Au piano avec Maurice Ravel*. Paris: Julliard
- Lowe, B. L. (2012) 'Analysing performances of Sibelius's fifth symphony: the 'one movement or two' debate and the plurality of the music object', *Musical Analysis*, 30(2/3), pp. 218-271.

- Martin, S. (1996) *Analysing musical recordings: an empirical approach*. PhD Thesis. University of Southampton.
- Martin, S. (2002) 'The case of compensating rubato', *Journal of the Royal Musicological Association*, 127(1), pp. 95-129.
- McAuley, J. D. (2010) 'Tempo and rhythm', *Springer Handbook of Auditory Research*, 36, pp. 165-200.
- McEwan, J. (1928) *Tempo rubato or time variation in musical performance*. London: Oxford University Press.
- Milsom, D. (2003) *Theory and practice in late nineteenth-century violin performance: an examination of style in performance, 1850-1900*. Aldershot: Ashgate.
- Paderewski, I. (1909) 'Paderewski on tempo rubato', in Finck, H. *Success in music and how it is won*. New York: Charles Scribner's Sons, pp. 454-461.
- Philip, R. (1984) 'The recordings of Edward Elgar (1857-1934): authenticity and performance practice', *Early Music*, 12(4), pp. 481-489.
- Philip, R. (1992) *Early recordings and musical style*. Cambridge: Cambridge University Press.
- Philip, R. (2003) 'Brahms's musical world: balancing the evidence', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*. Cambridge: Cambridge University Press, pp. 349-372.
- Philip, R. (2004) *Performing music in the age of recording*. New Haven and London: Yale University Press.
- Povel, D-J. (1977) 'Temporal structure of performed music: some preliminary observations', *Arts Psychologica*, 41, pp. 309-320.
- Rabinovici, A. (2005) 'Augustus Stroh's phonographic violin. A journey: Victorian London, Australia, Transylvania', *The Galpin Society Journal*, 58, pp 100-123.
- Repp, B. (1997) 'Expressive timing in a Debussy prelude: a comparison of student and expert pianists', *Musicae Scientiae*, 1(2), pp. 257-268.

Repp, B. (1998) 'A microcosm of musical expression. I. Quantitative analysis of pianists' timing in the initial measures of Chopin's Etude in E major', *Journal of the Acoustical Society of America*, 104(2), pp. 1085-1100.

Repp, B. (1999) 'A microcosm of musical expression. II. Quantitative analysis of pianists' dynamics in the initial measures of Chopin's Etude in E major', *Journal of the Acoustical Society of America*, 105(3), pp. 1972-1988.

Repp, B. (1999) 'A microcosm of musical expression. III. Contributions of timing and dynamics to the aesthetic impression of pianists' performances of the initial measures of Chopin's Etude in E major', *Journal of the Acoustical Society of America*, 106(1), pp. 469-478.

Riemann, H. (1882) *Musik-Lexicon*. Translated by J. S. Shedlock. London: Augener & Co.

Rink, J. (1999) 'Translating musical meaning: the nineteenth-century performer as narrator', in Cook, N. and Everist, M. (eds.) *Rethinking music*. Oxford: Oxford University Press, pp. 217-238.

Rink, J. (2002) 'Analysis and (or?) performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*. Cambridge: Cambridge University Press, pp. 35-58.

Ritterman, J. (2002) 'On teaching performance', in Rink, J. (ed.) *Musical performance: a guide to understanding*. Cambridge: Cambridge University Press, pp. 75-88.

Rivarde, A. (1921) *The violin and its technique as a means to the interpretation of music*. London: Macmillan and Co.

Rosenwald, L. (1993) 'Theory, text-setting and performance', *Journal of Musicology*, 11, pp. 52-65.

Roth, H. (1997) *Violin virtuosos: from Paganini to the 21st century*. Los Angeles: California Classic Books.

Sadie, S. (ed.) (1980) *New Grove dictionary of music and musicians*. London: Macmillan.

Schmalfeldt, J. (1985) 'On the relation of analysis to performance: Beethoven's Bagatelles Op. 126, Nos. 2 and 5', *Journal of Music Theory*, 29(1), pp. 1-31.

- Schoenberg, A. (1950) *Style and idea*. Translated by D. Newlin. New York: Philosophical Library.
- Schonberg, H. (1967) *The great conductors*. New York: Simon and Schuster.
- Seashore, C. (1938) *Psychology of music*. New York: Dover.
- Sherman, B. D. (2003) 'Metronome marks, timings, and other period evidence regarding tempo in Brahms', in Musgrave, M. and Sherman, B. (eds.) *Performing Brahms: early evidence of performance style*. Cambridge: Cambridge University Press, pp. 99-130.
- Sloboda, J. (1983) 'The communication of musical metre in piano performance', *The Quarterly Journal of Experimental Psychology*, 35(2), pp. 377-396.
- Sloboda, J. (2000) 'Individual differences in music performance', *Trends in Cognitive Science*, 4(10), pp. 397-403.
- Spohr, L. (1832) *Violinschule*. Vienna. Translated by J. Bishop. London: R. Cocks & Co., 1850.
- Stainer, J. (ed.) (1898) *Stainer and Barrett's dictionary of musical terms, new and revised edition*. London: Novello.
- Stravinsky, I. (1936) *An autobiography*. New York: Simon & Schuster.
- Sundberg, J., Askenfelt, A. and Frydén, L. (1983) 'Musical performance: a synthesis-by-rule approach', *Computer Music Journal*, 7(1), pp. 37-43.
- Taruskin, R. (1984) 'The authenticity movement can become a positivistic purgatory, literalistic and dehumanizing', *Early Music*, 12(1), pp. 3-12.
- Taruskin, R. (1995) *Text and act: essays on music and performance*. New York and Oxford: Oxford University Press.
- Taylor, F. (1887) *Technique and expression in pianoforte playing*. London: Novello.
- Todd, N. (1985) 'A model of expressive timing in tonal music', *Music Perception*, 3(1), pp. 33-58.

- Todd, N. (2009) 'A computational model of rubato', *Contemporary Music Review*, 3(1), pp. 69-88.
- Vos, P. and Handel, S. (1987) 'Playing triplets: facts and preferences', *Action and Perception in Rhythm and Music*, 55, pp. 35-47.
- Wagner, R. (1887) *Über das Dirigieren*. Translated by W. Ashton Ellis in *Richard Wagner's prose works*. London: Reeves, 1895.
- Walls, P. (2002) 'Historical performance and the modern performer', in Rink, J. (ed.) *Musical performance: a guide to understanding*. Cambridge: Cambridge University Press, pp. 17-34.
- Wen, E. (1992) 'The twentieth century', in Stowell, R. (ed.) *The Cambridge companion to the violin*. Cambridge: Cambridge University Press, pp. 79-91.
- Wessely, H. (1913) *A practical guide to violin-playing*. Reprint, London: Read Books, 2012.
- Wood, H. (1938) *My life of music*. London: Gollancz.
- Wurmser, L. (1964) 'Richard Strauss as an opera conductor', *Music and Letters*, 45(1), pp. 4-15.

Discography

- De Vito, G. de (1953) Polydor: 68308/12. Reissued as Archipel: ARPCD 0249.
- Ferras, C. (1953) Original matrix number unknown. Reissued as Archipel: ARPCD 0233.
- Ferras, C. (1954) Decca: LW50095. Reissued as Archipel: ARPCD 0313.
- Francescatti, Z. (1958) Columbia: ML5114. Reissued as Orfeo: C 534 001 B.
- Grumiaux, A. (1958) Philips: 802823AY. Reissued as Decca: RET039.
- Heifetz, J. (1939) HMV: DB5738/42S. Reissued as Naxos Historical: 8.110936.
- Heifetz, J. (1955) HMV: ALP1334. Reissued as BMG Classics: 82876-59410-2.
- Huberman, B. (1944) Rococo: 2007. Reissued as Music & Arts: CD-1122.
- Kogan, L. (1953) Original matrix number unknown. Reissued as Monopole Records: MONO011.
- Kogan, L. (1958) Angel: 35690. Reissued as Testament: SBT 1225.
- Kreisler, F. (1927) HMV DB1120/4 (set58). Reissued as Naxos Historical: 8.110921.
- Kreisler, F. (1936) HMV: COLH35. Reissued as Naxos Historical: 8.110925.
- Kulenkampff, G (1937) Supraphon: G22455.*
- Martzy, J (1954) Columbia: CX1165.*
- Menuhin, Y. (1949) Electrola: E90013. Reissued as EMI Classics: 7243 5 62822 2 3.
- Menuhin, Y. (1958) Capitol: PAO8410. Reissued as Seraphim: 7243 5 68526 2 4.
- Milstein, N. (1950) Original matrix number unknown. Reissued as Archipel: ARPCD 0086.
- Milstein, N. (1954) Capitol: CTL7070. EMI Classics: 7243 5 67583 2 2.
- Milstein, N. (1960) Capitol: P8560.*
- Neveu, G. (1945) HMV: COLH80. Reissued as EMI Classics: 7243 4 76830 2 2.
- Oistrakh, D. (1952) Vox: PL16380. Reissued as Urania: URN 22. 233.
- Oistrakh, D. (1955) Decca: DL9754.*
- Oistrakh, D. (1961) Original matrix number unknown. Reissued as BBC Music: BBCL 4102-2.

Oistrakh, D. (1970) Angel: 36033. Reissued as EMI Classics: 7243 5 67974 2 0.

Renardy, O. (1948) Decca: AK2055/9.*

Schneiderhan, W. (1953) Heliodor: 89519.*

Stern, I. (1973) Columbia: ML5486. Reissued as Sony Classical: SBK46335.

Szeryng, H. (1967) Victor: A630485. Reissued as Orfeo: C 719 071 B.

Szigeti, J. (1928) Columbia: 67608/12D. Reissued as Naxos Historical: 8.110948.

Szigeti, J. (1945) Columbia: 12281/5D.*

*Obtained from the British Library online sound archive